Missouri EPIDEMIOLOGIST

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THE USE OF AMANTADINE FOR CONTROL OF INFLUENZA TYPE A IN NURSING HOMES

INTRODUCTION

Influenza, commonly called "the flu", is a respiratory illness caused by influenza type A or type B viruses. Typical symptoms of influenza include fever, respiratory symptoms (such as cough, sore throat, or coryza), muscle aches and headache. Most young, healthy people who get influenza recover completely within one to two weeks. Older people and those with certain chronic diseases, however, are much more likely to develop serious medical complications or die following influenza infection. In the United States, influenza is associated with an average of about 20,000 deaths yearly, and an even larger number of hospitalizations.

Influenza is a particularly serious problem in nursing homes. Because of their age and underlying health problems, nursing home residents are at high risk of developing serious complications or dying when they become infected with influenza. They may also be at high risk of exposure to influenza, since the virus spreads more easily in environments where people live in close proximity to one another. Once the virus is introduced into such an environment, it can spread rapidly. During some nursing home outbreaks more than half of the residents have been infected, and many have been hospitalized or died.

Although annual immunization with influenza vaccine is the primary method for preventing influenza in nursing homes, outbreaks may still occur. Some elderly persons —especially those who are debilitated—have a lower antibody response to influenza vaccine than younger, healthier people. While studies have shown that influenza vaccine is less likely to protect some elderly people from becoming ill with influenza, these studies also have shown that vaccinated elderly people who do become ill often have a less severe illness and are less likely to develop serious complications or die compared to those who do not receive vaccine. Influenza vaccine has also been shown to induce herd immunity in nursing homes; thus, outbreaks are less likely to occur in nursing homes that have achieved high rates of vaccination among residents. Because influenza viruses undergo frequent mutations, one or more of the three influenza strains in the vaccine are usually updated each year. If a virus undergoes further mutation after the vaccine has been developed, the effectiveness of the vaccine may be reduced. This is one of the reasons outbreaks may occur in facilities with high vaccination rates. ■

THE ROLE OF AMANTADINE IN PREVENTING AND TREATING INFLUENZA TYPE A

Amantadine is recommended as a supplement to vaccine for controlling influenza type A. Amantadine protects against all strains of type A influenza viruses, and mutations in the virus that may decrease vaccine efficacy do not affect the action of the drug. When given before exposure to influenza A viruses, amantadine prevents illness in 70% to 90% of those taking the drug. Amantadine may also lessen the severity and duration of influenza A illness when given within 24 to 48 hours after the onset of symptoms. When outbreaks of influenza A begin in nursing homes, amantadine can be used to prevent further spread of the virus.

Amantadine is an antiviral drug that is used for preventing and treating influenza type A infections. The following describes the role of amantadine in the control of influenza A in nursing homes.

Excerpted from the Influenza Branch
Division of Viral Diseases
Center for Infectious Diseases
Centers for Disease Control

MISSOURI
INFLUENZA ISOLATES
By Health District
as of February 16, 1988

Health District	Number of Cases
Central	10
Eastern	35
Northwest	8
Northeast	0
Southeast	3
Southwest	1
TOTAL	57

MISSOURI
INFLUENZA ISOLATES
By Month of Report
As of February 16, 1988

Month	Number of Cases
December 1987	8
January 1988	18
February 1988	31
TOTAL	57

Influenza-like Illness
1987-88 Weekly Influenza
Active Surveillance

	HEALTH DISTRICT							
Week Ending	NW	NE	C	SE	SW	E	87-88 Total	86-87 Total
December 5	150	146	339	178	124	3	940	1178
December 12	284	219	432	418	137	59	1549	1265
December 19	223	257	156	346	122	6	1110	1504
December 26	588	203	118	108	172	0	1189	1922
January 2	428	74	0	114	9	0	625	2319
January 9	100	72	6	242	124	0	544	1365
January 16	380	272	126	361	121	79	1339	1402
January 23	634	296	391	866	152	29	2368	2366
January 30	506	902	498	933	422	66	3327	3926
February 6	1349	1517	663	918	1161	40	5648	3951

The drug may also be used to treat residents who have already become ill, although controlled studies have not been done to determine if amantadine can decrease the risk of medical complications in elderly or chronically ill people after they become infected. Following are guidelines for the use of amantadine to control influenza A outbreaks in nursing homes.

Because amantadine is effective only against influenza type A, and cannot control outbreaks of respiratory illness caused by influenza type B or other pathogens, it is important to determine the cause of the outbreak. Depending upon the circumstances, it may not be desirable to wait for results of laboratory tests to confirm the cause of the outbreak before amantadine is administered to residents.

Because influenza can spread rapidly within an institution, many more residents may become ill if amantadine administration is delayed for the time required for laboratory testing. This risk must be balanced against the risk of administering amantadine when the cause of the outbreak is a pathogen other than influenza A. Amantadine should be used as soon as an outbreak is recognized if sufficient evidence suggests that influenza A may be the cause. To determine the likelihood that influenza A is the cause, the following questions should be answered:

1. ***Are the clinical manifestations of the illness consistent with influenza? Although many other viruses can cause upper respiratory infections, influenza usually causes more severe systemic symptoms such as fever, headache, muscle aches and extreme malaise in addition to respiratory symptoms.***

2. ***Are influenza viruses circulating at this time? If so, what impact have they had in nursing homes? Influenza occurs seasonally and often in epidemics between about December and March. States conduct surveillance to estimate the extent of influenza-like illness, the types of viruses circulating and their impact; these findings are reported to CDC.***

When an outbreak of influenza-like illness begins in a nursing home, the state or local health department should be notified. Health department personnel can provide information about influenza activity and about how to collect clinical specimens and obtain a diagnosis. In many cases a diagnosis can be made within a few days, using new rapid diagnostic techniques now available in many laboratories.

If it is determined that influenza A is a likely cause of the outbreak, amantadine should be administered to all residents in the facility as soon as possible after the outbreak is recognized. Efforts should then be made to confirm the diagnosis by collecting and submitting specimens from ill residents and staff. Residents should receive amantadine whether or not they received influenza vaccine the previous fall. Those who are already ill may benefit from receiving amantadine as therapy, especially if they have been ill for less than two days. Amantadine should also be offered to staff members who have contact with residents, especially staff who did not receive influenza vaccine the previous fall. Dosage recommendations and precautions should be noted before amantadine is administered. If influenza A is confirmed by laboratory tests, residents and staff should continue to take amantadine until evidence shows that influenza A activity has declined in the surrounding community.

(Information about influenza activity is available from state and local health departments and is reported regularly throughout the influenza season in CDC's Morbidity and Mortality Weekly Report.) ■

NEED FOR CONTINGENCY PLANS

Before outbreaks occur, nursing homes should develop contingency plans so that orders to administer amantadine can quickly be obtained from residents' physicians. Since it is difficult to know in advance how long amantadine will need to be administered, some nursing homes have a policy that allows an infection control committee, medical director or infectious disease consultant to decide when amantadine should be discontinued. This prevents having to contact attending physicians again after receiving the initial order, either to renew the order or to discontinue the order after it has been determined that amantadine prophylaxis should be stopped. Authorization to continue amantadine until the designated person or committee has made the decision to discontinue the drug can be obtained from the attending physicians at the time the initial order is given. ■

NEED FOR SURVEILLANCE OF FEVER AND RESPIRATORY SYMPTOMS

Nursing homes also should develop a system for monitoring the incidence of febrile respiratory illness among residents and staff. Some nursing homes already have such a system in place as part of their routine infection control surveillance; other homes may have to modify their infection surveillance system to allow them to distinguish between the incidence of illnesses characterized by fever plus respiratory symptoms and other febrile illnesses. By having a system that can detect the incidence of influenza-like illness, outbreaks can more easily be recognized before illness becomes widespread. Such a system also provides a way to monitor the effect of amantadine prophylaxis on the incidence of influenza-like illness.

For these purposes, influenza-like illness is often defined as fever higher than 99.8 F orally or 100.8 F rectally and at least one of the following: cough, sore throat or coryza.

(Need for Surveillance Cont'd...)

Since amantadine is not 100% effective, some residents may develop influenza or an illness clinically similar to influenza even after amantadine prophylaxis has begun. However, if large numbers of residents continue to become ill in spite of amantadine prophylaxis, this could be an indication that the outbreak may not be caused by influenza A. In such a case, efforts to determine the cause should be intensified, and amantadine discontinued if indicated. ■

MONITORING POSSIBLE ADVERSE REACTIONS TO AMANTADINE

During the time amantadine is being administered, nursing homes should also have a system for monitoring possible adverse reactions to amantadine. Although there is evidence that most elderly persons who take amantadine at a daily dose of 100 mg will have few side effects and that most side effects that do occur will be mild, some residents may exhibit side effects that warrant discontinuation of the drug or a reduction of the dose. Appendix A (page 4) provides a list of side effects associated with amantadine toxicity. It is suggested that this list be provided to the nursing staff so that signs and symptoms which may represent toxicity can be recognized and reported. ■

AMANTADINE DOSAGE RECOMMENDATIONS, SIDE EFFECTS AND PRECAUTIONS

Approximately 5%-10% of healthy younger adults experience side effects when taking amantadine at a dosage of 200 mg daily. These side effects, such as nervousness, insomnia, impaired concentration, mood changes, light-headedness, anorexia and nausea, are usually mild and transitory, may diminish or disappear after about one to two weeks in spite of continuing the drug, and cease soon after the drug is discontinued. However, when amantadine has been administered to elderly persons at a dosage of 200 mg daily, side effects have been more common and more severe.

Therefore, it is now recommended that the dose of amantadine be reduced to no more than 100 mg daily for persons aged 65 or older. Younger persons taking 200 mg daily who experience side effects should also consider reducing their daily dose to 100 mg. Limited data suggest that a dose of 100 mg daily also may be effective for prevention of influenza A in healthy younger adults.

Because most of this drug is not metabolized and is excreted by the kidneys, people with impaired renal function attain higher blood levels of the drug compared with young, healthy people taking equivalent dosages. Since a reduction in renal function often occurs as part of the aging process, older people require a lower dose of the drug to attain blood levels similar to those observed in healthy younger people. When amantadine has been given to elderly nursing home residents at a daily dose of 100 mg, the incidence of serious side effects has been low. Persons with more severe renal impairment require further reductions in dosage. Guidelines for amantadine dosage in persons with renal insufficiency are based on creatinine clearance and are described in the drug package insert.

Because these guidelines may provide only a rough estimate of the optimal dose for an individual patient, patients with renal insufficiency require careful clinical observation so that any adverse reactions can be recognized promptly and the dosage reduced or the drug discontinued if necessary.

Further information is available by telephone from DuPont Pharmaceuticals, one of the manufacturers of amantadine. Health care providers can call this toll-free number for general information or for consultation about the use of amantadine for individual patients. This service is also available to the general public.

(800)441-9861

OTHER MEASURES TO REDUCE THE RISK OF INTRODUCTION AND CONTROL THE SPREAD OF INFLUENZA IN NURSING HOMES

In addition to vaccinating residents and staff members each fall and using amantadine as a supplement to vaccination when indicated, other measures are available that may reduce the risk of introducing influenza into the nursing home or controlling the spread of infection if it is introduced. These include:

1. **Restricting visitors who have acute respiratory illnesses. During influenza season, and especially during community outbreaks of influenza, consider posting signs in lobbies and elevators reminding visitors that they should refrain from visiting the nursing home when they have an acute respiratory illness.**

2. **Reassigning ill staff members. If staff members normally assigned to resident care duties insist upon working when they have acute respiratory symptoms, they should be assigned to positions that do not involve contact with residents until their symptoms have resolved.**

3. **Isolating residents who develop influenza-like illness. If residents who are ill are kept away from common areas such as dining rooms or sitting rooms and excluded from group activities until their acute symptoms have abated, there is less chance that they will infect other residents.** ■

E. Coli Hemorrhagic Colitis

Several cases of hemorrhagic colitis and hemolytic uremic syndrome have been diagnosed in Missouri. An association is thought to exist between gastrointestinal infection and *E. coli* toxins in the development of hemolytic uremic syndrome. From recent studies in Seattle, Washington and Vancouver and Ontario, Canada, *E. coli* 0157:H7, producer of Shiga-like 1 and Shiga-like 2 toxins, is being suggested as one of the most common causes of bloody diarrhea and perhaps the most common infectious cause of hemolytic uremic syndrome. Due to lack of epidemiologic studies the prevalance of *E. coli* 0157:H7 in other areas of the country is not yet known.

Because of the rapid elimination of *E. coli* 0157:H7 from the body, stool cultures become nonproductive seven days after onset of symptoms. Therefore, it is necessary to determine by symptomatology if culture attempts for *E. coli* 0157:H7 should be included with normal enteric agents from the original stool specimens. The clinical presentation of this illness can be distinguished from the bloody diarrhea caused by other enteric organisms by the lack of fever and the large amount of bright red liquid and clotted blood in the stool. A special isolation media, MacConkey-Sorbital agar, is used when *E. coli* 0157:H7 is cultured, making it necessary for the physician to alert the laboratory regarding the patient's symptoms.

Further information can be obtained by calling your local health department or the Bureau of Communicable Diseases, 314/ 751-6113. ■

With prior arrangements, the Missouri State Public Health Laboratory will screen stool samples for *E. coli* 0157:H7. The following criteria should be met:

1. **The patient's symptoms are compatible with hemorrhagic colitis and the sample is collected by day six after onset of symptoms.**

   OR

2. **Hemolytic uremic syndrome is suspected.**

Special arrangements for stool cultures should be made by calling the Microbiology Unit at (314) 751-3334.

Stool specimens will not be screened for E. coli 0157:H7 without prior arrangements.

INFLUENZA UPDATE -- Missouri

During the past few weeks, reported cases of influenza-like illness have increased statewide. During the first week of February, 5,648 cases were reported as compared to 3,951 reported cases for the same time period of 1987.

A total of 57 laboratory-confirmed cases of influenza A have been reported as of February 16. Of these, 25 cases were cultured as subtype influenza A (H3N2) including one case which was identified as influenza A Leningrad. To date, there have been no isolates of Influenza A (H1N1) or Influenza B reported in the state. The tables on the next page show the distribution of influenza isolates by type, month and health district.

Determination of specific strains circulating in Missouri is performed by the laboratory at the Centers for Disease Control, Atlanta, Georgia. These results are not yet available. However, several outbreaks of influenza-like illness have occurred in highly vaccinated populations elsewhere in the United States. This may indicate that the circulating strain has drifted significantly from the Influenza A Leningrad strain included in the current vaccine.

Further information can be obtained by calling your local health department or the Bureau of Communicable Diseases, 314/ 751-6113. ■

APPENDIX A
SIGNS AND SYMPTOMS THAT MAY REPRESENT AMANTADINE TOXICITY

Listed below are signs and symptoms that have been associated with amantadine toxicity. Although very few patients would be expected to have serious side effects when taking amantadine at a dose of 100 mg daily, some patients, such as those with unrecognized renal insufficiency, may develop side effects that require discontinuation of the drug or a reduction in the dose. It is important for nursing staff to be familiar with these signs and symptoms so that potential side effects can be recognized promptly. If any resident taking amantadine develops signs of amantadine toxicity, the situation should be discussed with a physician as soon as possible. In most nursing homes, some residents may already exhibit some of these signs and symptoms because of underlying physical and/or mental disorders. In these cases, nursing staff should take note of changes in the quality or severity of the sign or symptom.

The following signs and symptoms may represent amantadine toxicity:

Confusion
Delusions
Marked personality changes
Hostility
Aggressiveness
Agitation
Hallucinations
Nausea and vomiting
Dizziness
Ataxia
Loss of balance
Falling

Less serious side effects include nervousness, irritability, insomnia, fatigue, depression and decreased appetite. These side effects are often mild and transitory, but may occasionally be sufficiently troublesome to warrant adjustment of the dosage or discontinuation of the drug.

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Tuberculosis and the Acquired Immunodeficiency Syndrome

Bert Malone, Chief, Bureau of Tuberculosis Control

In recent years, the incidence of tuberculosis in Missouri has failed to decline as anticipated. In fact, 1987 marked the second consecutive year of increased tuberculosis incidence and a sharp contrast to the average annual decline of 7.7 percent in the previous five years. This trend is consistent with the United States experience which reported an increase of 2.6 percent in 1986 compared to 1985, the first such increase in many years. Missouri was one of 21 states to have reported an increase that year.

The failure of the national and state morbidity to fall as anticipated in 1987 and 1986 may be partly related to the incidence of tuberculosis among persons with the acquired immunodeficiency syndrome (AIDS). This may be attributed to the belief that compromised immunity secondary to infection with the human immunodeficiency virus (HIV), may predispose the activation of latent *M. tuberculosis* infection. Evidence for this hypothesis is seen in data from areas of the country with the highest tuberculosis incidence. These are the same areas where the majority of AIDS cases have occurred. Data from New York City indicates that the tuberculosis morbidity has occurred in the same geographic areas of the city which reports the majority of AIDS cases. Nearly 10 percent of patients with AIDS reported in Florida from 1981-1985 also had tuberculosis.

The Missouri Experience

In Missouri, the AIDS case register has been confidentially compared to the tuberculosis case register in order to determine the proportion of tuberculosis patients with AIDS as well as the proportion of AIDS patients with tuberculosis and certain characteristics of individuals with both conditions.

As of March 4, 1988, Missouri has reported 489 cases of AIDS since the first AIDS case was reported in 1982. In addition, 103 individuals were diagnosed in Missouri with residence elsewhere. Of the Missouri cases, 256 individuals have died. The number of AIDS cases has doubled each year, except for 1987 when the increase was 163 percent. The majority of reported cases have been in the metropolitan areas of Kansas City and St. Louis, however, cases have been reported throughout the state. A significant number of cases also have been reported in the Springfield/Greene County area which is the location of the Medical Center for Federal Prisoners, the facility receiving all AIDS cases and/or HIV infected inmates in the federal prison system.

Of the 489 AIDS cases in Missouri reported to date, 10 (2 percent) have been reported with tuberculosis. These 10 individuals ranged from 29 to 47 years of age, with a median age of 34. Nine individuals (90 percent) were male; six (60 percent) were black; and two individuals were of Hispanic origin. Nearly all (90 percent) had the diagnosis of AIDS made within two years of the diagnosis of tuberculosis and only five individuals (50 percent) had pulmonary disease. Five individuals had extrapulmonary disease, with three reported with lymphatic disease, one with meningeal, and one with tuberculosis of the skin.

Four individuals had homosexual or bisexual exposure as the primary risk factor; four had a history of IV drug abuse, while one individual had both homosexual exposure, and a history of IV drug abuse. Two individuals claimed no risk factor other than heterosexual exposure.

Clinical Issues

This association between AIDS or HIV infection and tuberculosis raises significant clinical as well as public health issues.

INSIDE THIS ISSUE

Diagnosis of tuberculosis in patients likely to have HIV infection

The diagnosis of tuberculosis is complicated by the fact that tuberculosis often has unusual clinical manifestations among persons with HIV infection. Extrapulmonary disease is more common, with lymphatic or disseminated disease seen more frequently. In order to establish the diagnosis of tuberculosis it is essential to perform microscopic examination and culture of specimens as appropriate to the clinical picture presented. In patients with pulmonary tuberculosis the clinical picture will appear radiographically similar to other pulmonary infections. Patients may present with infiltrates in any lung zone, often associated with mediastinal or hilar lymphadeonapathy or both. It is uncommon to have radiographic evidence of cavitation.

Treatment of tuberculosis in patients likely to have AIDS

Antituberculosis therapy should be started whenever acid-fast bacilli are found from a patient with AIDS or suspected HIV infection. Patients with tuberculosis and HIV infection generally respond to standard antituberculosis drugs. However, since extensive data is not currently available, it is recommended that the duration of treatment be longer than in standard regimens for patients without HIV infection. The current recommendation of the American Thoracic Society and the Centers for Disease Control entitled, *Treatment of Tuberculosis in HIV-infected Individuals,* states: "The recommended drugs and dosages for adults are isoniazid (INH) 300 mg/day, rifampin (RIF) 600 mg/day (or 450 mg for patients weighing less than 50kg), plus pyrazinamide (PZA) 20 to 30 mg/kg/day, during the first 2 months of therapy. Ethambutol (EMB) 25 mg/kg/day should be included in the initial treatment regimen if central nervous system or disseminated disease is present or when INH resistance is suspected. Drug susceptibility tests should be performed routinely and the treatment regimen revised if resistance to any of the drugs being used is found. The appropriate duration of treatment for patients with tuberculosis and HIV infection is unknown; however, it is recommended that treatment continue for a minimum of 9 months and for at least 6 months after documented culture conversion. Some experts suggest continuing INH therapy for the remaining lifetime of the individual. If either INH or RIF is not, or cannot be, included in the treatment regimen, therapy should continue for a minimum of 18 months and for at least 12 months after culture conversion. After therapy is completed, patients should be followed closely and bacteriologic examinations should be repeated if clinically indicated."

Evaluation of tuberculosis patients for infection with HIV

Patients with tuberculosis should be evaluated in order to identify risk factors for HIV infection. If any risk factor is determined, HIV antibody testing should be encouraged. Such testing is routinely recommended for individuals with severe or unusual manifestations of tuberculosis. The clinical management of the tuberculosis will need to be modified if the presence of HIV antibody is detected. Additionally, appropriate counseling should be afforded to the HIV infected tuberculosis patient in order to minimize the risk of transmitting HIV infection.

Testing should also be considered for persons with tuberculosis infection without disease if they are in one of the high-risk groups for HIV infection. If antibodies to the AIDS virus are detected in the tuberculosis infected patient, isoniazid preventive therapy should be strongly considered regardless of the patient age. Isoniazid (300 mg/day) should be administered for a duration of 12 months.

Evaluation of HIV infected persons for the presence of tuberculosis and tuberculous infection

Individuals who are HIV-antibody positive, particularly those at high risk of tuberculosis infection, should be tuberculin tested with 5 TU tuberculin, PPD, Mantoux method. Due to the HIV induced immune suppression, false negatives may occur. This is more likely to occur as deterioration of the immune system progresses. If the skin test is significant ($\geq$ 10mm), a chest x-ray should be obtained. Sputum for smear and culture should be obtained if any abnormalities are detected on the radiograph.

For persons with AIDS or HIV-related disease, a tuberculin test should also be administered. Due to the likelihood of false negatives related to the compromised immune system, a chest x-ray also should be examined regardless of the tuberculin test reaction.

Examination for evidence of extrapulmonary disease also should be conducted.

Summary

The failure of national and state tuberculosis morbidity to decline as expected in 1986 and 1987 has raised concern regarding the impact of AIDS and HIV-related illness on tuberculosis. The epidemiologic and clinical features of tuberculosis in patients with AIDS or HIV infection are often unusual. There is a high frequency of extrapulmonary disease, with lymphatic disease being the most common site. Pulmonary tuberculosis presents in an unusual fashion with infiltrates appearing in any lung zone and rarely causing cavitation.

Tuberculosis in these individuals is preventable, does respond to therapy but presents new clinical manifestations which serve as challenges to the diagnostic skills of today' clinician.

For additional information, please contact the **Bureau of Tuberculosis Control, 314/751-6122.** ■

Administration of Isoniazid Preventive Therapy

The following are recommendations of the Bureau of Tuberculosis Control regarding chemopreventive therapy for infected individuals without evidence of active tuberculosis:

✓ individuals who are tuberculin (PPD) positive
—Isoniazid (INH) daily by mouth for a duration of **six** months;

✓ individuals who are PPD positive **and** have radiographic evidence of stable parenchymal lesions
— INH daily by mouth for a duration of **12** months;

✓ individuals who are PPD positive **and** human immunodeficiency virus (HIV) sero positive
— INH daily by mouth for a duration of **12** months.

Isoniazid is used alone for preventive therapy. The drug is given in a single daily dose of 300mg per day for adults and 10-15mg per kg of body weight per day, not to exceed 300mg per day, for children.

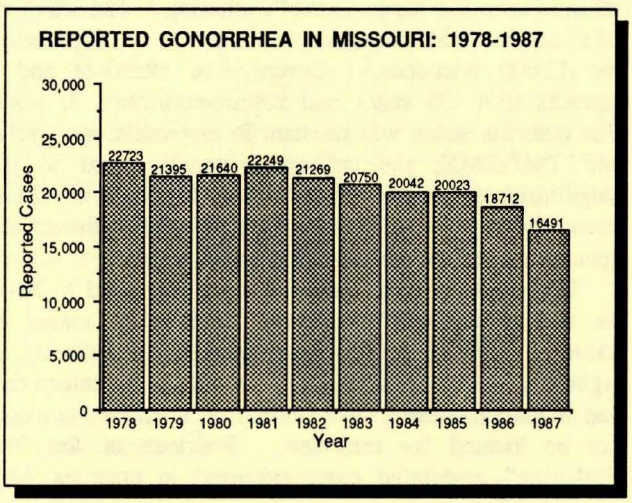
For additional information on the indications for preventive therapy or guidelines in the monitoring of individuals receiving prevwentive therapy, contact the Bureau of Tuberculosis Control at **314/751-6122.** ■

Sexually Transmitted Disease Trends

Ray Bly, Chief, Bureau of Sexually Transmitted Diseases

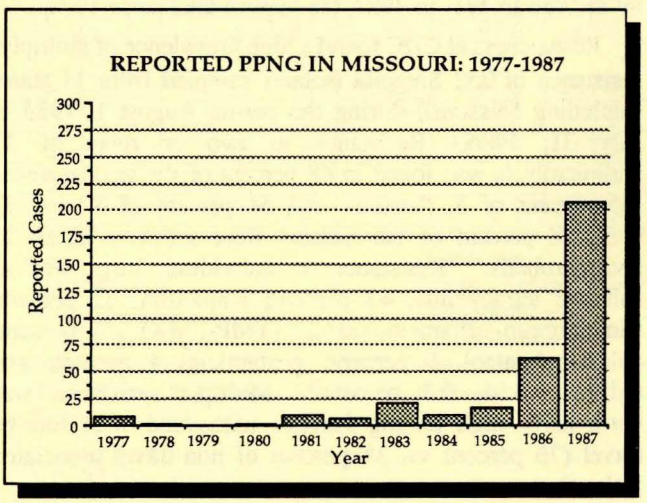
Gonorrhea

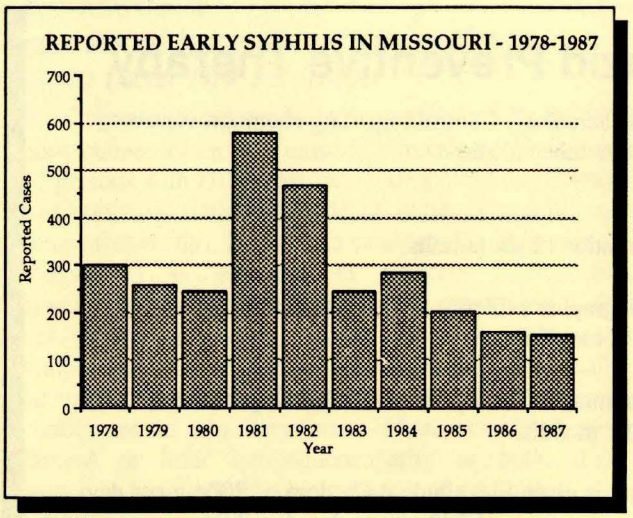
A significant decline in reported cases of gonorrhea in Missouri was observed for the 6th consecutive year during calendar year (CY) 1987 when 16,491 cases were reported. This 11.9 percent decrease from CY 1986 was noted throughout the state. Gonorrhea morbidity continues to be concentrated in the St. Louis and Kansas City metropolitan areas, which accounted for 81 percent of the reported cases in CY 1987. Cases reported in areas of Missouri other than St. Louis and Kansas City are also concentrated in the larger population centers with 78 percent being reported in 17 counties where larger cities are located.



PPNG

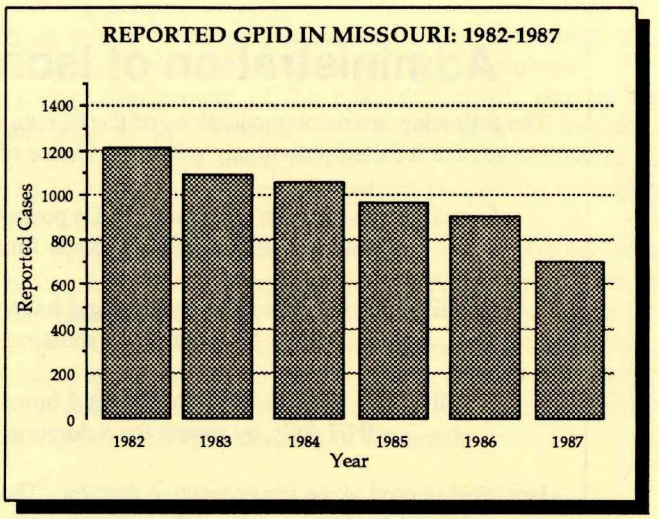
Penicillinase-producing Neisseria gonorrhoeae (PPNG), a type of gonorrhea resistant to penicillin therapy, has shown a dramatic increase since the first eight cases were reported in Missouri in CY 1977. The most significant increases were observed in CY 1986 and 1987 when an outbreak began in October 1986 in Kansas City. The Kansas City area accounted for 89 percent of the 208 cases reported in Missouri in CY 1987. This outbreak has continued into 1988 with Kansas City reporting 57 cases and St. Louis reporting 14 cases for the first 11 weeks. For information regarding diagnosis, treatment and management of PPNG cases, refer to the *Missouri Epidemiologist*, Vol. IX, No. 2, March/April 1987, or call the Bureau of Sexually Transmitted Diseases, 314/751-6141.





Syphilis

A substantial decrease in reported early syphilis (primary, secondary and early latent under one year) has occurred in five of the last six years in Missouri. Early syphilis has declined from a high in CY 1981 of 579 cases to 153 cases or a decrease of 73.6 percent in CY 1987. An increase in early syphilis currently is being reported in the United States with large population centers reporting the majority of cases. This national increase presents a possible threat of importation to Missouri from areas outside the state. However, syphilis surveillance and aggressive disease intervention activities are being continued in an effort to minimize chances for spread of infection in the state.



Gonococcal Pelvic Inflammatory Disease

Gonococcal pelvic inflammatory disease (GPID), the most serious complication of gonorrhea in females, has shown a steady decrease since CY 1982. A decline from 1,214 cases reported in CY 1982 to 704 (42 percent) reported in CY 1987, is consistent with the overall decrease noted for gonorrhea. ■

Antimicrobial-Resistant Shigellosis

Mahree Bright, Acting Chief, Bureau of Communicable Diseases

Two multi-state outbreaks of antimicrobial-resistant *Shigella sonnei* occurred in 1987, and the results of a recent CDC study indicate that such resistance is increasingly common. This may complicate efforts to control shigellosis in Missouri, where reported cases increased from 89 in 1986 to 471 in 1987, the highest total since 1974.

Researchers at CDC found a high prevalence of multiply-resistance in 252 Shigella isolates sampled from 14 states (including Missouri) during the period August 1, 1985 to July 31, 1986.[1] Resistance to two or more of 12 antimicrobials was found in 48 percent of the isolates tested (35 percent of *S. flexneri* and 54 percent of *S. sonnei*). Only 18 percent of the isolates were sensitive to all 12 antimicrobials. Resistance to individual drugs was as follows: tetracycline, 43 percent; ampicillin, 32 percent; trimethoprim-sulfamethoxazole (TMP-SMX), 7 percent; chloramphenicol, 5 percent; gentamicin, 4 percent; and nalidixic acid, 0.4 percent. Multiple resistance was particularly high among isolates associated with foreign travel (76 percent vs. 38 percent of non-travel associated isolates).

Multi-State Outbreaks

Missouri was one of 26 states involved in a common-source outbreak of multiply-resistant *S. sonnei* in July and August, 1987. The outbreak began at an annual gathering in North Carolina in early July of a group which will be referred to in this report as the "Gathering." The attack rate of acute diarrheal illness was estimated to be 50 percent of the 12,000 attendees.[2] Seventy-five attendees and 14 contacts from 26 states had culture-confirmed *S. sonnei*. The outbreak strain was resistant to ampicillin, tetracycline, and TMP-SMX, the antibiotics usually used to treat shigellosis, as well as carbenicillin, sulfa, erythromycin and streptomycin.[3,4] It showed sensitivity to nalidixic acid, gentamicin, chloramphenicol and cephalothin.[4]

Thirty-two Missouri residents were identified as having the multiply-resistant "Gathering" strain of *S. sonnei* (see Table 1). Five of the cases had attended the gathering and eight were household contacts of attendees. Seventeen cases had no known contact with "Gathering" attendees; two could not be located for interview. Fourteen of the "non-Gathering" associated cases occurred in counties where

(Shigellosis Cont'd)

TABLE 1
"Gathering" Multiply-Resistant Shigella
Missouri - 1987
By County and Classification

COUNTY	ATTENDEES	Gathering CONTACTS	NON-Gathering	UNKNOWN	TOTAL
Audrain	0	0	2	0	2
Boone	0	2	4	2	8
Cooper	1	0	0	0	1
Howell	0	1	0	0	1
Miller	0	0	1	0	1
Moniteau	2	0	10	0	12
Ozark	0	5	0	0	5
Shannon	1	0	0	0	1
St. Louis City	1	0	0	0	1
TOTAL	5	8	17	2	32

"Gathering" cases resided, two occurred in an adjacent county, and the remaining one was associated with another cluster reported in mid-Missouri and described below. Two related clusters of "Gathering-type" shigellosis were reported in Pennsylvania; one was associated with a restaurant and the other with a nursing home.[3]

Another multi-state outbreak of *S. sonnei* occurred during the period November 1986 to June 1987 in New York, New Jersey, Ohio, and Maryland.[5] New York City had the largest number of cases, with 1,328 culture-confirmed and the actual number estimated to be over 13,000 cases. Most of the infected persons were Jewish people strongly adhering to traditional rituals. Person-to-person transmission was thought to be likely since no common source was identified. More than 25 percent of the initial isolates were resistant to ampicillin; TMP-SMX resistance increased from 2 percent of tested isolates in January to 12 percent in March.

Mid-Missouri Cluster

The largest cluster of cases in Missouri not directly associated with the "Gathering" consisted of 10 cases in Moniteau County, with one related case in Miller County. These occurred in a home day-care setting; six children and five related adults were infected, including the babysitter. Most of these individuals were members of one extended family. Interviews with the infected persons did not reveal any known contact with "Gathering" attendees; however, the plasmid profile and antibiotic sensitivity pattern of these isolates were identical with the "Gathering" strain.[6] This information points to the need for sensitivity testing to guide in treating shigellosis cases which require antimicrobial therapy. Further spread of multiply-resistant strains may present significant problems for both clinical treatment of severe cases and adequate control of outbreaks. Further information regarding shigella can be obtained by contacting your local health department or calling the **Bureau of Communicable Diseases**, 314/ 751-6115.

1. Tauxe RV, Puhr, ND, Hargrett-Bean N, Blake PA. Anti-microbial resistance in Shigella, United States, 1985-1986. Abstract 289, Abstracts of the Interscience Conference on Antimicrobial Agents and Chemotherapy, 1987.
2. CDC. Shigellosis--North Carolina. *MMWR* 1987;36:449-50.
3. CDC. Nationwide dissemination of multiply-resistant *Shigella sonnei* following a common-source outbreak. *MMWR* 1987;36:633-34.
4. Horan JM, Tauxe RV. CDC, unpublished written communication. September 4, 1987.
5. CDC. Multi-state outbreak of *Shigella sonnei* gastroenteritis--United States. *MMWR* 1987;36:440-42, 448-49.
6. Spiegel R. CDC, unpublished verbal communication. December 23, 1987. ■

Hilda Chaski Joins Division of Environmental Health and Epidemiology as Deputy Director

Hilda C. Chaski, a public health consultant from Connecticut, has brought her expertise to the Missouri Department of Health. Chaski joined DOH late last year as deputy director for the Division of Environmental Health and Epidemiology.

As a consultant to the Connecticut Epidemiology Program, Chaski coordinated surveillance for Lyme Disease. Her work included the development of a laboratory-based surveillance system and the implementation of a retrospective study of statewide incidence.

Chaski also served as a consultant for the Westport/Weston Health District in Connecticut. She aided in restructuring of the environmental health division, designed a data collection system for cost-of-service analysis and planning and revised the sanitary code and regulations.

A graduate of Yale University School of Medicine, Department of Epidemiology and Public Health, where she earned her masters of public health, Chaski has also worked as an epidemiologist for the Massachusetts Department of Health. There she designed and executed a retrospective study of adverse reactions to DTP vaccination and expanded and maintained the Lyme Disease surveillance program.

Prior to her work in Massachusetts, Chaski spent 11 years working as an environmental health sanitarian in Delaware where she became interested in epidemiology and evaluative research through work in disease outbreak investigations. During four years of that time, she also taught anatomy and physiology to nursing and medical technology students at Delaware Technical and Community College. ■

Botulism from Chopped Garlic: Delayed Recognition of a Major Outbreak

Michael E. St. Louis, M.D.; Shaun H.S. Peck, M.B., F.R.C.P.; David Bowering, M.D.; et al

The following abstract is from the Enteric Diseases Branch, Division of Bacterial Diseases, Centers for Disease Control, Atlanta, Georgia, and the Vancouver Health Department, City of Vancouver, British Columbia, Division of Epidemiology, Ministry of Health, Victoria British Columbia, Health Protection Branch, Health and Welfare Canada.

Diagnosis of botulism in two teenaged sisters in Montreal led to the identification of 36 previously unrecognized cases of type B botulism in persons who had eaten at a restaurant in Vancouver, British Columbia, during the preceding six weeks. A case-control study implicated a new vehicle for botulism, commercial chopped garlic in soybean oil ($P < 10^{-4}$). Relatively mild and slowly progressive illness, dispersion of patients over at least eight provinces and states in three countries, and a previously unsuspected vehicle had contributed to prolonged misdiagnosis, including myasthenia gravis (six patients), psychiatric disorders (four), stroke (three), and others. Ethnic background influenced severity of illness: 60% of Chinese patients but only 4% of others needed mechanical ventilation ($P < 10^{-3}$). Trypsinization of serum was needed to show toxemia in one patient. Electromyography results with high-frequency repetitive stimulation corroborated the diagnosis of botulism up to 2 months after onset. Athough botulism is a life-threatening disease, misdiagnosis may be common and large outbreaks can escape recognition completely. ■

Water and Sewage System Quality: An Issue for Country Home Buyers

Nix Anderson, Bureau of Community Sanitation

At the present time approximately 22 million homes utilize some form of on-site sewage disposal—mostly septic tanks and drainfields. The number of on-site systems is increasing with about one-half million new systems being installed each year. This constitutes approximately 25 percent of all housing units in the United States. Within the past several years, migration of the population from cities to suburban and rural areas has been significant. Many of the people making this shift have never dealt with on-site sewage and private water wells, and in many cases the cost of operating and maintaining such facilities impose severe economic burdens on the individuals. This article will outline questions which should be asked and answered on water and sewage systems before buying a home.

Water Supply (If Private)

Q. When was the well installed?

A. All water wells installed after September 1987 should be registered with the Missouri Department of Geology and Land Survey. All water well drilling contractors and pump installers are required to be permitted. This is to insure proper protection of the groundwater supply. Ask for a copy of well registration if the well was drilled after September 1987. If the well was drilled before that date, ask for a loan approval from your local or district health department.

Q. When was the last chemical sample taken?

A. If the last sample for chemical analysis was taken more than six months ago, ask that another one be taken. The chemical quality of the water can change. This chemical quality is becoming more and more important due to potential contamination from pesticides and herbicides.

Q. Has a bacteriological sample been taken?

A. A bacteriological sample should be taken from inside the home. Contact your local or district health department. Also, check to see if there is a history of "safe" samples taken on this water supply.

Q. Check the location of the well. Is the well and sewage system located out of drainage or flood area?

A. This is especially important if the well is shallow (less than 100 feet). The following chart shows the approved distance needed between your well and sources of possible pollution.

DOH Recommended
Minimum Safe Distances in Feet

From	Septic Tank	Absorption Field	Neighbor's Septic Tank/Field
Well	50	100	100
Property Line	10	5	-
Foundation Wall	5	5	-
Water Lines	10	10	10

On-Site Sewage

Q. What type of sewage system does the house have?

A. There are many types of on-site sewage systems. Each one is designed to operate in different type soil conditions. The soil conditions must be compatible to the type system that is being used.

—A small pond or lagoon may be used in very tight soils.
—In good soils underground absorption systems are normally used.
—Large beds or mounds are used in marginal soils.

Q. What type systems are being used in the area?

A. Make a quick survey of the different type of systems that are being used in the area and if they are working properly. This will give you an idea if the soil conditions of the area are compatible to on-site sewage systems. Ask the neighbors.

Q. Where is the system?

A. Check to see if the present owner has a sketch or map of the system. Check sewage pipes in basement or crawl space to see where they leave house. This should give you a good idea of which side of the house the sewage system is located. Check to see if the soil is wet or if tall weeds are noted in the area of the drainfield. The end of buried pipe sticking out of the ground can indicate problems. Heavy vegetation and wet areas can denote problems with soil absorption field. If the system is a lagoon, check to see how large the lagoon is (should be at least 900 sq. ft.) and if it has been properly maintained. Gentle sloping sides will help with maintenance. Overgrowth on pond will keep it from operating efficiently.

Q. Who put the system In?

A. This information is needed so you know what has been installed and to evaluate whether it will operate effectively in the soil conditions. You should also ask the installer when the system was installed.

Q. When was the septic tank last pumped?

A. All septic tanks should be pumped at least every three years. This is necessary to protect the drainfield.

Q. Has the health department approved the system?

A. This is probably the most important question you can ask. Contact your local or district health department and have them inspect the system.

Remember, it is the home owner's responsibility to maintain the drinking water and to dispose of waste in such a manner that it does not endanger the public health of neighbors or family members. A good rule of thumb is never buy or build a home without first consulting with your local or district health department.

To receive a free copy of the pamphlet, "Guide for the Construction of Septic Tank and Soil Absorption System," contact your local health department or the **Bureau of Community Sanitation, 314/751-6090.** ■

Morbidity and Mortality Weekly Report (MMWR)
Subscription Sources

The following is current information on two sources that offer the *MMWR* subscription. The subscription includes 52 weekly issues, four-six periodic supplements, four quarterly issues and an annual index.

	First Class	Third Class
Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402 Ph: 202/783-3238	$62	$49
Massachusetts Medical Society-*MMWR* CSPO Box 9120 Waltham, MA 02254 Ph: 617/893-4610	$46	$26

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Toll-free No.: 800-392-0272

MISSOURI DEPARMTENT OF HEALTH - Epidemiology Services - Communicble Disease Control

BIMONTHLY MORBIDITY REPORT

Reporting Period * November and December, 19 87.

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	2 MONTH STATE TOTALS		CUMULATIVE		
	NW	NE	CD	SE	SW	ED **	OTHER ***				1987	1986	FOR 1987	FOR 1986	5 YEAR MEDIAN
Vaccine Preventable Dis.															
Chickenpox	610	239	265	302	191	105		0	0	7	1719	809	8595	5093	2474
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	0
Influenza	0	0	0	0	0	1		0	2	1	4	6	69	78	78
Measles	0	0	0	0	0	0		0	0	0	0	1	190	32	5
Mumps	3	0	4	1	1	0		0	0	1	10	6	38	23	18
Pertussis	0	0	9	1	0	1		3	0	0	14	13	46	32	24
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0		0	0	0	0	0	0	1	1
Tetanus	0	0	0	0	0	0		0	0	0	0	0	1	2	2
Viral Hepatitis															
A	93	2	12	41	65	7		77	0	1	298	3	560	126	126
B	16	2	13	10	7	6		44	4	5	107	83	460	420	359
Non A - Non B	2	0	1	0	2	0		4	0	1	10	7	46	39	33
Unspecified	0	0	0	0	1	0		1	0	0	2	0	21	15	46
Meningitis															
Aseptic	9	2	3	3	4	1		15	0	0	37	59	163	172	156
H. influenza	10	1	7	3	3	7		6	3	2	42	45	131	172	104
Meningococcal	2	0	4	1	2	0		0	1	0	10	11	35	40	46
Other	0	1	1	0	1	2		3	0	2	10	28	65	123	123
Enteric Infections															
Campylobacter	8	0	4	0	10	3		11	3	13	52	48	260	281	260
Salmonella	6	1	13	7	17	4		6	21	21	96	103	660	728	617
Shigella	6	16	24	2	5	9		4	24	30	120	21	471	89	143
Typhoid Fever	0	0	0	3	0	0		0	0	0	3	0	7	6	6
Parasitic Infections															
Amebiasis	1	1	0	5	0	0		0	1	1	9	3	27	26	28
Giardiasis	23	8	34	7	6	14		17	1	21	131	146	690	516	458
Toxoplasmosis	2	0	0	5	0	0		0	1	0	8	41	96	77	*
Sexually Transmitted Dis.															
AIDS	6	0	3	1	7	1		36	13	8	75	18	239	91	28
Gonorrhea	131	31	104	75	104	29		777	909	306	2466	2946	16491	18712	20042
Genital Herpes	17	7	29	5	3	8		34	26	16	145	264	1340	1364	*
Nongonococcal urethritis	48	8	52	25	9	25		199	582	253	1201	1313	7947	6641	*
Primary & secondary syphilis	0	0	0	0	0	0		6	3	0	9	16	90	89	145
Tuberculosis															
Extrapulmonary	0	1	0	0	3	0		2	5	2	13	19	57	69	53
Pulmonary	5	2	6	5	7	3		14	7	6	55	54	282	269	311
Zoonotic															
Animal Bites	100	18	16	25	18	24		5	0	2	208	158	2406	1070	*
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	2	1	*
Rabies (Animal)	1	0	0	5	0	0		0	0	0	6	8	59	75	75
Rocky Mtn. Spotted Fever	2	0	2	2	1	0		3	1	1	12	7	26	25	14
Tularemia	2	2	3	2	9	0		2	0	0	20	8	58	32	35

Low Frequency Diseases

Anthrax
Botulism
Brucellosis -1
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious) -2
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease -6
Legionnellosis -5
Leptospirosis
Lymphogranuloma Venereum
Malaria -2
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome -5
Trichinosis -1

Outbreaks

Foodborne/waterborne -4
Histoplasmosis
Nosocomial -2
Pediculosis
Scabies -1
Other -3

** Reporting Period Beginning Nov 01, Ending Dec 31.*

*** Totals do not include KC, SLC, or SLCo.*

**** State Institutions*

Due to data editing, totals may change.

* data not available

MISSOURI DEPARMTENT OF HEALTH - Epidemiology Services - Communicble Disease Control

BIMONTHLY MORBIDITY REPORT

Reporting Period * January and February , 19 88 .

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	2 MONTH STATE TOTALS		CUMULATIVE		
	** NW	NE	CD	SE	SW	** ED	*** OTHER				1988	1987	FOR 1988	FOR 1987	5 YEAR MEDIAN
Vaccine Preventable Dis.															
Chickenpox	587	284	495	291	474	174		2	7	32	2346	2418	2346	2418	
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	
Influenza	4	1	11	4	1	2		6	2	9	40	39	40	39	
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	
Mumps	2	2	1	2	0	3		0	0	0	10	3	10	3	
Pertussis	1	0	1	0	0	0		0	0	0	2	9	2	9	
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	
Rubella	0	0	0	0	0	0		0	0	0	0	0	0	0	
Tetanus	0	0	0	0	0	0		0	0	0	0	0	0	0	
Viral Hepatitis															
A	51	1	1	30	5	1		14	0	2	105	15	105	15	
B	11	2	13	4	8	4		13	3	8	64	28	64	28	
Non A - Non B	3	0	0	0	0	0		1	0	0	4	6	4	6	
Unspecified	0	0	0	0	0	0		0	0	0	0	2	0	2	
Meningitis															
Aseptic	1	0	0	1	0	0		2	0	0	4	11	4	11	
H. influenza	3	2	3	0	0	0		1	2	4	15	20	15	20	
Meningococcal	0	0	1	0	3	2		0	0	2	8	8	8	8	
Other	0	0	0	1	1	1		1	1	1	6	11	6	11	
Enteric Infections															
Campylobacter	3	0	3	0	8	1		4	0	4	23	26	23	26	
Salmonella	6	0	7	5	10	10		7	12	15	72	45	72	45	
Shigella	0	2	6	1	8	5		0	15	8	45	12	45	12	
Typhoid Fever	0	0	0	0	0	0		0	0	0	0	2	0	2	
Parasitic Infections															
Amebiasis	0	0	0	2	1	1		1	0	1	6	2	6	2	
Giardiasis	1	7	8	2	1	1		4	0	3	27	67	27	67	
Toxoplasmosis	0	0	0	0	0	0		0	2	0	2	18	2	18	
Sexually Transmitted Dis.															
AIDS	5	0	3	1	5	1		16	18	5	54	30	54	30	
Gonorrhea	101	31	105	62	78	24		863	763	282	2309	2786	2309	2786	
Genital Herpes	5	2	37	17	12	8		96	113	55	345	232	345	232	
Nongonococcal urethritis	39	2	22	23	9	18		226	542	275	1156	1334	1156	1334	
Primary & secondary syphilis	0	0	0	2	2	0		6	2	1	13	13	13	13	
Tuberculosis															
Extrapulmonary	1	1	0	0	0	0	0	1	0	0	3	14	3	14	
Pulmonary	0	1	5	1	3	1	1	1	4	5	22	34	22	34	
Zoonotic															
Animal Bites	41	2	11	7	5	13		1	0	8	67	97	67	97	
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	0	0	
Rabies (Animal)	0	0	0	1	0	0		0	0	0	1	4	1	4	
Rocky Mtn. Spotted Fever	0	0	0	0	0	0		0	0	0	0	0	0	0	
Tularemia	0	0	1	0	3	0		1	0	0	5	2	5	2	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious)
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease -1
Legionnellosis -1
Leptospirosis
Lymphogranuloma Venereum
Malaria -1
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome -3
Trichinosis -1

Outbreaks

Foodborne/waterborne
Histoplasmosis
Nosocomial
Pediculosis
Scabies
Other -1 (Hep A)

* *Reporting Period Beginning* Jan 03, *Ending* Feb 27.

** *Totals do not include KC, SLC, or SLCo.*

*** *State Institutions*

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Missouri EPIDEMIOLOGIST

Volume X, Number 3 *May - June 1988*

Adult Immunizations-- An Investment in Prevention

Steve D. Weems, Bureau of Immunization

Introduction

Prevention of disease is more cost effective than treating illness, and immunization is a proven prevention method. Incidence of many diseases has been sharply reduced with the development of effective programs to immunize children at appropriate ages. Immunization programs for adults, however, have received less attention from the health professions and the media. As a result, vaccine-preventable diseases still occur more frequently than necessary in adults, often with serious consequences.

Seven highly effective and safe vaccines are recommended for all or many adults. These are influenza, pneumococcal, tetanus, diphtheria, measles, mumps and rubella immunizations. Each year thousands of lives are lost and millions of health care dollars are spent because adults at risk for these diseases have not been adequately protected.

Influenza and Pneumonia

Influenza and pneumococcal disease are presently the most prevalent and costly illnesses that can be prevented by immunization. Excess annual mortality due to influenza has exceeded 10,000 persons during many recent epidemics. Over 80 percent of these deaths occur in persons 65 years of age or older. Pneumococcal infection is the most common cause of bacterial pneumonia, and is responsible for thousands of deaths each year.

Influenza Immunization. It is recommended by the Advisory Committee on Immunization Practices (ACIP) that influenza vaccine be administered each year to several groups of adults at high risk of influenza-related complications, including: persons with severe chronic disorders of cardiovascular or pulmonary systems, residents of nursing homes and other chronic care facilities, and all healthy persons 65 years old and older.

Pneumococcal Immunization. Individuals can be protected from 23 types of pneumococcal disease responsible for 87 percent of recent bacteremic pneumococcal disease in

Measles, Mumps and Rubella Immunization. A combined measles, mumps, and rubella vaccine (MMR) is recommended for all adults believed to be susceptible to any one of these diseases unless the vaccine is specifically contraindicated. Susceptible adults include:

* persons born after 1956 who lack documentation of live-virus measles immunization after first birthday;

* all adults, particularly males, thought to be susceptible to mumps; and

* all adults, particularly females, without documentation of immunity to rubella (immunization after first birthday or positive serologic test).

It has been reliably estimated that only 20 percent of the high risk populations are protected against influenza and pneumococcal disease. Also, less than half of adults have reliably protective levels of antibodies to diphtheria and tetanus. Further, about 15-20 percent of young adult women are susceptible to rubella, and at least 5-10 percent of young adults are unprotected against measles and mumps.

Inside this Issue...

(Adult Immunizations Cont'd)

If America's adults are to benefit from the technology for immunization now available, as well as from new vaccines being developed, national efforts to promote adult immunization must continue and be strengthened in the public and private health care sector. All those who provide health care to older adolescents and adults should provide immunization as a routine part of their practice. In addition, individuals in certain age, occupational, and lifestyle groups are at increased risk of these illnesses and should be immunized. International travelers to some countries may be at increased risk of exposure to vaccine-preventable illnesses. Foreign students, immigrants, and refugees may also be susceptible to these diseases.

Concurrently, leadership in the nation's communities must be mobilized to promote adult immunization for local residents. Regular, sustained effort involving coordination and cooperation among a diverse set of community groups and health care professionals is necessary to accomplish high immunization levels in the adult population. ■

A Health Guide For The International Traveler

Steve D. Weems, Bureau of Immunization

While traveling abroad, the tourist can take certain steps to reduce the risk of becoming ill. However, despite precautions, illness may occur. Here are some general preventive health measures and suggestions that could save you some precious sun and fun time and may even help you avoid some potentially serious problems.

1. Food and the Prevention of Foodborne Diseases: A series of precautions is generally recommended to help prevent foodborne disease, especially during travel to developing areas of the world.

   * Do not eat raw vegetables or fruits unless they can be peeled and you peel them yourself. Generally avoid lettuce and other green leafy vegetables.

   * Do not eat raw or rare meat.

   * Do not eat raw fish.

   * Avoid milk or dairy products such as ice cream and soft cheeses in areas of the world where hygiene and sanitation are poor.

   * Avoid eating food purchased from street vendors.

   * Eat well-cooked foods which are still hot, as these foods are usually safe.

An unproven but practical and common sense guide to determining whether a restaurant is reasonably sanitary is to inspect the restroom. If the restroom facilities are in poor repair, unkempt and dirty, you may reasonably assume that the kitchen workers' restroom facilities are even worse and that hygienic practices at the restaurant may be inadequate.

2. Water and the Prevention of Waterborne Disease: Here are a few tips recommended to help prevent waterborne disease.

Only chlorinated public water supplies are considered safe for drinking; in some regions, even these sources are variably chlorinated and unreliable.

* Safe alternatives to plain water include:

a. Drinks made with boiled water (coffee, tea, soup).

b. Beer and wine.

c. Canned or bottled CARBONATED drinks. However, water on the outside of cans or bottles might be contaminated. Wet cans or bottles should be dried before opened, and drinking surfaces wiped clean.

d. It had once been thought that bottled, non-carbonated water was generally safe. However, more recent experience results in the current recommendation that bottled, non-carbonated (still) water be avoided in areas of inadequate sanitation.

* Avoid Ice:

a. Ice should be avoided in areas where public water supplies are unsafe or unreliable, since it may have been made from contaminated water.

b. Alcohol in mixed drinks will not sterilize contaminated water or ice it may be mixed with.

* Brush your teeth with a safe liquid. Tooth-brushing with contaminated water may result in sufficient exposure to result in illness.

* If public tap water supplies are not chlorinated, THERE ARE THREE WAYS OF MAKING THIS WATER SAFE TO DRINK. Boiling for approximately 10 minutes is most reliable, but treatment with chlorine or iodine are acceptable alternatives when boiling water is not feasible.

(International Travel Cont'd)

3. Insects: It has been estimated that unprotected travelers to tropical areas may suffer as many as 100,000 insect bites each year! On arrival, obtain local information on helpful protective measures against insects.

   In certain parts of the world, three precautions may be advised:

   a. Use screens in dwellings and nettings over beds.
   b. Use insect repellents on a regular basis.
   c. Wear long-sleeved shirts and trousers.

4. Diarrheal Diseases or Turista: This is probably the single most common illness affecting international travelers. Up to 50 percent or more of Americans traveling to certain countries will have a bout of travelers' diarrhea. The risk of contracting diarrhea may be lessened by following the general precautions regarding food and water. Travelers ARE ADVISED TO SEEK MEDICAL CARE WHEN ANY OF THE FOLLOWING OCCUR:

   a. Especially severe diarrhea develops.
   b. Diarrhea lasts more than three days.
   c. Blood or mucus is present in the diarrheal bowel movement.
   d. Diarrhea is accompanied by high fever or shaking chills.
   e. Diarrhea results in dehydration.

   Eating solid foods will not delay recovery from diarrhea and may help to preserve your strength.

5. Medications: Avoid over-the-counter remedies (those available without a prescription) in foreign countries. These remedies may contain substances capable of causing severe side effects. Some of these substances have been banned in the United States because of health hazards. Seemingly innocuous remedies such as cough syrup or fever concoctions may contain hazardous drugs.

GENERAL MEDICAL HINTS

1. Glasses/Contact Lenses: It is advisable to take an extra pair of glasses or contact lenses as well as a copy of your eyeglass prescription. Remember to take along an adequate supply of cleaning solution for contact lenses.
2. Prescription Drugs: If you need prescription drugs (such as heart pills, asthma medication), make sure you have an adequate supply for your entire trip. Also, take a letter from your physician describing the reason for taking the drug (heart disease, asthma), the scientific (generic) name of the drug and the proper dosage. This could be useful in an emergency.
3. Cards/Bracelets for Medical Conditions or Allergies: A card or bracelet indicating specific problems (i.e., diabetes; allergic to penicillin) could be useful in an emergency.
4. Medical History: If you have a chronic disease, a brief summary of your medical history provided by your physician could be useful in an emergency.

TAKE WITH YOU

1. Your routine medications
2. Aspirin
3. Calamine lotion for insect bites
4. Sunburn ointment
5. Insect repellent
6. Motion sickness medication
7. Thermometer

Plan ahead so that needed immunizations, drugs and documents can be obtained without a last-minute rush.

This information will be available soon in brochure form from the Bureau of Immunization. For more information on international travel or what immunizations may be required, contact the Bureau of Immunization, P.O. Box 570, Jefferson City, Missouri, 65102, 314/751-6133.■

EIS Officer Assigned to State of Missouri

Dr. Robert Brady will join the state department of health in July as an Epidemic Intelligence Service (EIS) Officer. The Division of Field Services, Centers for Disease Control has an annual EIS program which provides epidemiology training to physicians and veterinarians. Part of this training may include an internship or two-year assignment to state health departments to perform "shoe leather" epidemiology or remain "in-house" at the Centers.

Dr. Brady received his doctorate degree in veterinary medicine from Ohio State University in 1983. He was in private practice for three years in Pennsylvania and New Jersey before joining the U.S. Department of Agriculture, Public Veterinary Practice Careers Program in 1986. He is currently employed by the USDA Veterinary Biology staff in Hyattsville, Maryland where he does evaluation of veterinary vaccines and diagnosis test kits requesting licensure. We welcome Dr. Brady to the "Show-Me" state where he will use his personal hobby of being an outdoorsman to learn about Missouri. ■

Food Preparation on Float Trips, Trail Rides and Hiking

David Stull, Coordinator, Food Service Sanitation
Bureau of Community Sanitation

When food is being prepared and packaged on an outdoor outing such as a float trip, trail ride or hike, the following items should be considered:

1. **Temperature of the food products.** Hot food items should be kept above 140 degrees F. and cold food items below 45 degrees F. to prevent bacterial growth.

2. **The length of time between preparation of the food product and consumption.**

3. **The types of food to be consumed.**

4. **The amount of preparation time needed and the equipment required for food preparation.**

If cold storage is available through a well-insulated container (such as an ice chest or cooler), potentially hazardous foods such as meats, dairy products and poultry are possible menu items. If the length of time between the preparation and the consumption of the food items is more than four hours, then proper holding temperatures must be provided. Care should be taken to protect the food from direct contact with melting ice by sealing the foods in plastic bags or waterproof containers. The ice should be from a safe water supply free of bacteriological and chemical contaminates.

During hot weather and if cold storage is not available, the food products should be those that are dehydrated or packed in hermetically-sealed containers where spoilage will not occur. When rehydrating dry food products, the water should be from a safe supply.

Where possible, it is advisable that single-service articles, such as paper plates and cups be used. These used items should be disposed in proper containers and taken with you if trash receptacles are not provided. This eliminates the need for washing/cleaning utensils which may be difficult in areas provided on float trips, trail rides and hiking.

If safe water is not available at sites along the float trip or trail, then containers must be taken. These containers should be clean and sanitized with a solution of one teaspoon [50 ppm] chlorine bleach to a gallon of water for one minute before being filled and should be designed with tight-fitting lids and dispensing spigots that are easily cleanable.

In conclusion, the best advice for taking foods on outdoor events where it is difficult to maintain sanitary conditions would be to use foods that are prepared in a simple manner and are not prone to spoilage under outdoor conditions. For more information, call your local health department or the Bureau of Community Sanitation, 314/ 751-6090. ■

Lyme Disease *(Borreliosis)*

F. T. Satalowich, D.V.M., M.S.P.H., Chief, Bureau of Veterinary Public Health

Borreliosis is a disease of wild rodents, deer and man. The etiologic agent is a spirochete, *Borrelia burgdorferi*, first identified in 1982, but the cause of this disease scenario since 1909. The disease is transmitted by the tick *Ixodes dammini, pacifus*, and perhaps *scapularis*. Other ticks are not of importance in the transmission of this disease. The *Ixodes dammini* and *pacifus* are not present in the state of Missouri. *Ixodes scapularis* does inhabit Missouri, but does not normally bite the human species.

At the present time, neither Lyme Disease nor *Borrelia burgdorferi* have been confirmed to exist in Missouri. The Missouri Department of Health has investigated cases since 1983. Serological diagnostic tests are the IFA and the Elisa. The sensitivity and specificity of these tests in an endemic area are good. In a non-endemic area such as Missouri, they are of limited value with results difficult to interpret. These tests are only available from private laboratories.

The disease manifests itself in three stages. The first is a characteristic skin lesion, erythema chronicam migrans (ECM), which appears as an expanding red macula or papule and maybe singular or multiple. This is accompanied by nonspecific constitutional symptoms such as fever, headache, myalgias and arthralgias. Arthritic, neurologic and cardiac complications may occur weeks or months after initial onset. Treatment consists of a 10-14 day regiment of tetracycline, penicillin, or ceftriaxone.

Ninety percent of all Lyme Disease cases have been diagnosed in eight states. Connecticut, Massachusetts, New Jersey, New York, and Rhode Island on the Eastern Seaboard; Wisconsin and Minnesota in the Midwest; and California on the West Coast. Missouri and its neighboring states are not high risk areas for Lyme Disease. For more information, call the Bureau of Veterinary Public Health, 314/ 751-6136. ■

Control of Selected Household Pests

Fred Unnewehr, Coordinator, General Sanitation, Bureau of Community Sanitation

Probably the most common pests of the *phylum arthropoda* (Greek word meaning jointed feet) in the animal kingdom that invade our households are the house fly, cockroach, ant and spider.

The following control recommendations reflect present technology relative to these pests. Probably as high as 90 percent of the success in controlling them is linked to good sanitary practices. Spiders invade homes primarily to capture and consume insects that are allowed to infest the premises.

House Flies

The elimination of materials attractive to flies and fly breeding areas through good sanitation practices is the most important point in controlling flies around the house. Accumulations of garbage, wastes and manure must be kept to a minimum. Pet pens must be cleaned regularly and the manure buried or spread to dry. Garbage cans must be emptied frequently and should be cleaned whenever an accumulation of waste clings to the inside. Only cans without holes and with tight-fitting lids should be used for garbage. Loose lids allow the adult flies to get into the cans and deposit eggs. Rusted-out holes allow the mature larvae (maggots) to get out of the cans and to pupate in the soil prior to emerging as winged adults.

Regardless of how well fly control is practiced, some adult flies will always be present; therefore, good screens are essential to exclude them. Fourteen to 16 mesh screens are desirable. They must be tightly fitted in windows and screen doors must be spring loaded so they will remain closed. If good sanitation practices are followed and effective screens are in place, few flies will get inside the house. Those that do can be controlled with a fly swatter or household space sprays or aerosols containing resmethrin, dichlorvos or pyrethrins plus piperonyl butoxide. Space sprays are designed to be effective against flying insects and do not leave a residual deposit for the insects to contact later. DO NOT contaminate food, dishes, cooking utensils or food preparation surfaces when using space sprays.

House flies and many other flies have the habit of resting on plants or on the sides, walls, rafters, etc., of buildings. Some degree of control can be obtained by spraying these surfaces with insecticides which have a long residual action. The residues of the insecticide will kill flies for several days to several weeks after application. (see Table I). DO NOT apply these residual sprays inside the house. When treating animal shelters (dog kennels, etc.), remove the animals before spraying and keep them out until the spray has dried. Ready-to-use fly baits can be used if they are placed near doors (outside) and other areas where flies congregate. DO NOT place where children or pets may contact the bait material.

Cockroaches

Four species of cockroaches (the American, Brown Banded, German and Oriental) commonly infest Missouri homes. Of these, the German cockroach is by far the most common.

Good sanitation is the necessary first step in cockroach control. Insecticidal control is best when applied in cracks and crevices where the cockroaches hide. Concentrate on cracks and crevices around the kitchen cabinets, under appliances, in bathrooms and in basements. For crack and crevice sprays, use formulations listed in Table I. Boric acid powder is a slow, but effective material to use in void areas. Several effective baits are available. Do not spray any surface upon which food comes in direct contact. If cabinet shelves are treated, first remove all items. Treat and allow to dry. Then cover with new shelf paper before items are returned to the shelves. Often it is best to hire the services of a professional. Professional pest control operators have access to some of the best cockroach insecticides that are not sold to non-licensed pesticide applicators. They also have know-how and special equipment that make cockroach control easier.

Ants

Ants in the kitchen are usually attracted by either sweets or grease. These materials are soon contaminated and made unfit for human use. Only rarely do most ant species nest inside the house. Nests are usually found in the ground outside the house or within the foundation. The exceptions may be the pharaoh ant and the carpenter ant. For control in the home, use ready-to-use formulation listed in Table I. Spray window sills, door thresholds, cupboard walls, under shelves, under work tables and sink, and walls over which ants are crawling. They will pick up enough insecticide to be killed as they crawl over these sprayed surfaces. DO NOT contaminate food or utensils. Ants usually follow a definite travel path from their nest to the kitchen. Try to follow this path back to the nest and treat it with a residual insecticide. The pharaoh ant is a particularly difficult species to control. It is often found nesting in institutional buildings such as hospitals. Bait is the most effective way of controlling this pest (see Table I).

Spiders

Most house spiders are perfectly harmless. The only poisonous spiders found in Missouri are the brown recluse

(Household Pests Cont'd)

and the black widow spiders. The brown recluse spider can be distinguished from other brown spiders by the dark brown fiddle-shaped mark on the back of the thorax. The black widow spider is jet black with a red hourglass marking on the underside of the abdomen. Spiders feed on insects. Sanitation and the timely use of an insecticide will reduce the insect population and thus aid in the elimination of a spider problem. Thorough spraying with a residual household spray in the basement, attic, storage areas, in corners, around light fixtures, backs of chests and dressers will eliminate many spiders. Also, apply spray outside, under eaves and around doors and windows (see Table I).

TABLE I
Insecticides Used in Controlling Pests

PESTS	RESIDUAL SPRAYS	BAITS
House Flies	1% dimethoate (Cygon) 1% fenthion (Baytex) 0.1% permethrin 1% propoxur (Baygon)	(dry) 0.5 % dichlorvos 1% malathion 1% trichlorfon (Dipterex, Nequvon)
Cockroaches	0.5% chlorpyrofos (Dursban) 1.5% diazinon 1% propoxur (Baygon)	2% propoxur (Baygon) 0.5% chlorpyrifos (Dursban)
Ants	0.5% diazinon 1% propoxur (Baygon) 0.5% chlorpyrifos (Dursban)	boric acid in mint apple jelly Methoprene I.G.R. (Pharorid)
Spiders	0.25% resmethrin 0.5% diazinon 1% propoxur (Baygon) 0.5% dichlorvos (DDVP, Vapona) 0.5 % chlorpyrifos (Dursban)	N/A

CAUTION
APPLY ACCORDING TO LABEL DIRECTION ONLY

Note: The use of trade names is for identification purposes only and does not constitute endorsement by the Missouri Department of Health.

Discontinuance of Selected Laboratory Tests

Eric C. Blank, Dr. P.H., Director, State Health Laboratory

Due to budgetary restraints, commercial availability of tests and necessary reassignment of personnel to accommodate the large increase in specifically prioritized and funded areas of public health, the State Health Laboratory will discontinue specific serologic testing services on July 1, 1988. These tests include:

Histoplasma capsulatum (histoplasmosis)
Coccidioides immitis (coccidioidomycosis)
Cryptococcus neoformans (cryptococcosis)
Brucella abortus (brucellosis)
Entamoeba histolytica (amebiasis)
Mycoplasma pneumoniae
Respiratory Syncytial Virus (RSV)
Parainfluenza
Blastomyces dermatitidis (blastomycosis)
Aspergillus spp. (aspergillosis)
Legionella pneumophila (Legionnaires disease)
Francisella tularemia (tularemia)
Cytomegalovirus (CMV)
Varicella (chickenpox)
Adenovirus

Specimens which are received on or after July 1, 1988 will be returned to the sender.

Indoor Air Quality

Stephen L. Meek, Industrial Hygienist, Bureau of Environmental Epidemiology

INTRODUCTION

The air we breathe at work and at home can affect our performance, comfort, and health. Mechanical heating, ventilating, and air conditioning (HVAC) systems may do an adequate job of heating and cooling, but an inadequate job of ventilating. When that is the case, common contaminants such as carbon dioxide accumulate in the air. Our homes and offices become "stuffy," the air stale, and we may get drowsy, headachy, irritable, and less productive. If, through our attempts to clean objects, kill insects, smoke tobacco products, run copying machines, or tastefully decorate our environment with modern materials and furnishings, we introduce potentially harmful substances to our breathing air, then we may experience more serious symptoms including eye, nose, and throat irritation, coughing, dizziness, and nausea. Generally, as the variety and severity of the symptoms increase so do absenteeism from work and loss of productivity.

CAUSES OF POOR AIR QUALITY

While specific contaminants and conditions may vary from building to building, most reported instances of so-called "sick building syndrome" have resulted from inadequate ventilation. The National Institute for Occupational Safety and Health (NIOSH) conducted some 446 investigations of buildings with indoor air quality problems. In 52 percent of the studies, inadequate ventilation was identified as the most important cause. Contamination from an inside source was primary in 17 percent of the cases. Contamination from outside the building caused 11 percent; building fabrics or components caused 3 percent. Microbial contamination was the most important problem in 5 percent of the cases. The cause was unknown in 12 percent.

Contaminants released inside a building may include tobacco smoke, copier chemicals, cleaning agents, pesticides, hair spray, and a host of other particles and gases. Contaminants from outside may include motor vehicle exhaust smoke, stack gases, and the like. Building component contaminants may include formaldehyde, solvents, glues, asbestos fibers, fiberglass fibers, and cellulose particles. Microbial contamination may emanate from humidifiers and cooling equipment and include bacteria, fungi, protozoa, and microbial products. Insufficient ventilation alone usually results in increased carbon dioxide levels from human respiration.

CONTROLLING INDOOR AIR POLLUTION

Controlling the release of contaminants at the source is the most obvious and direct means of correcting problems; prohibiting or restricting smoking indoors is just one example. Another is providing a localized exhaust system for copiers and other office or home machines that introduce chemical pollutants to the air. Redesign or relocation of outside air intakes may eliminate the drawing in of outdoor pollutants. Limiting the use of strong cleaning agents and pesticides may help, as may sealing off sources of particles and fibers from the circulating air. However, control of all sources is not always possible or practical. The answer then is to dilute the contaminants with increased fresh air ventilation.

In the past, pre-oil embargo era buildings were designed and built with less regard for energy efficiency. Today most people are concerned with energy costs. We have thick insultation, non-opening and/or thermally efficient windows, air lock entryways, weather stripping, and other means of limiting air infiltration. Unfortunately, these same measures reduce our sources for fresh air. Modern HVAC systems for commercial buildings compensate with variable air intake devices. Homes, even the newest ones, generally rely on air infiltration through and around windows and doors. These may not be sufficient to prevent the build up of contaminants.

CORRECTING AIR QUALITY PROBLEMS

Even a properly designed HVAC system can be rendered ineffective if its operation is hampered or its capability exceeded. Owners and occupants should limit the introduction of pollutants. Additional steps include maintaining the HVAC system at peak efficiency through regular maintenance and replacing or cleaning of filters. Dirty components and filters restrict the flow of air and may provide a breeding ground for microbials. Partitions and furniture may hinder air circulation. They should be moved as needed to allow free circulation. Air inlets and outlets should not be located so closely together as to "short circuit" ventilating air. Inlets and outlets should not be shut off or blocked. Doing so may provide temporary heat or draft relief but will impair circulation and interfere with designed system operation. Ventilation rates should be increased during periods of increased pollution potential such as

(Indoor Air Quality Cont'd)

remodeling, painting, insecticide spraying, or the introduction of new carpeting and furnishings. In commercial buildings or homes lacking provisions for the intentional introduction of fresh air, "airing out" during mild weather periods will help. At other times, energy conservation measures should be balanced with indoor air quality considerations for health and comfort. Leaving selected windows partially open to allow the introduction of fresh air and the exhaust of stale air may be all that is needed. A window or attic fan might be used temporarily when pollution levels are high.

SUMMARY

The air we breathe can become contaminated at work or at home to an extent that may affect our comfort and well-being. Most indoor air quality problems are caused by inadequate ventilation associated with restricted or absent provisions for the introduction of fresh outdoor air. Control of indoor air pollution can be achieved through proper HVAC system maintenance and operation, removing or limiting the sources of pollution, and ensuring sufficient fresh air introduction.

FURTHER INFORMATION

The following sources can provide additional information on indoor air quality:

Bureau of Environmental Epidemiology
1730 E. Elm St., P.O. Box 570
Jefferson City, Missouri 65102
(314) 751-6102

Public Relations Office
American Society of Heating,
Refrigerating, and Air Conditioning
Engineers (ASHRAE)
1791 Tullie Circle NE
Atlanta, Georgia 30329

Public Information Center
U.S. Environmental Protection Agency
Mail Code PM-211B
401 M. Street SW
Washington, DC 20460

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P.O. Box 570, 1730 E. Elm Street
Jefferson City, MO 65102-0570
Telephone: (314) 751-6080
Toll-free No.: 800-392-0272

MISSOURI DEPARMTENT OF HEALTH - Epidemiology Services - Communicble Disease Control

BIMONTHLY MORBIDITY REPORT

Reporting Period * March and April , 1988 .

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	2 MONTH STATE TOTALS		CUMULATIVE		
	** NW	NE	CD	SE	SW	** ED	*** OTHER				1988	1987	FOR 1988	FOR 1987	5 YEAR MEDIAN
Vaccine Preventable Dis.															
Chickenpox	1300	167	701	479	660	409		0	19	285	4020	3503	6366	5921	
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	
Influenza	4	0	13	5	1	3		0	5	9	40	6	77	57	
Measles	0	0	0	0	0	0		0	0	0	0	35	0	35	
Mumps	3	0	2	1	0	1		0	2	3	12	10	22	13	
Pertussis	0	0	2	0	0	0		1	0	0	3	4	5	13	
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	
Rubella	0	0	0	0	0	0		0	0	0	0	0	0	0	
Tetanus	0	0	0	0	0	0		0	1	0	1	0	1	0	
Viral Hepatitis															
A	55	0	10	15	13	5		54	1	0	153	29	258	44	
B	18	2	21	4	12	13		39	6	24	139	106	200	134	
Non A - Non B	3	1	2	0	2	1		0	0	4	13	8	17	14	
Unspecified	3	0	0	0	3	0		0	0	0	6	5	6	7	
Meningitis															
Aseptic	1	0	0	1	4	0		5	0	0	11	10	15	20	
H. influenza	1	2	0	4	5	1		4	2	4	23	34	39	54	
Meningococcal	1	0	0	0	0	4		1	2	1	9	8	17	16	
Other	2	2	1	0	2	2		3	1	1	14	19	20	30	
Enteric Infections															
Campylobacter	7	1	4	7	9	5		6	8	11	58	30	81	56	
Salmonella	8	3	11	4	4	8		12	12	30	92	119	163	164	
Shigella	1	0	9	9	23	5		4	33	25	109	20	152	32	
Typhoid Fever	0	0	0	0	0	0		0	1	1	2	1	2	3	
Parasitic Infections															
Amebiasis	0	0	1	1	0	1		0	0	2	5	1	11	3	
Giardiasis	13	5	9	11	1	3		10	2	14	68	93	95	160	
Toxoplasmosis	3	0	0	0	0	0		2	0	0	5	26	5	44	
Sexually Transmitted Dis.															
AIDS	3	0	1	2	0	1		22	26	9	64	19	118	49	
Gonorrhea	100	21	108	83	104	23		933	941	348	2661	2451	4970	5237	
Genital Herpes	12	9	48	12	13	24		83	105	53	359	291	704	523	
Nongonococcal urethritis	44	7	68	27	6	25		220	670	293	1360	1224	2516	2558	
Primary & secondary syphilis	2	0	2	1	0	1		15	1	3	25	9	38	22	
Tuberculosis															
Extrapulmonary	0	0	2	0	1	0	0	0	1	3	7	4	10	18	
Pulmonary	4	4	5	8	8	1	3	3	8	7	51	37	73	71	
Zoonotic															
Animal Bites	234	33	41	115	64	60		0	3	432	982	702	1049	799	
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	0	0	
Rabies (Animal)	0	0	0	3	0	1		0	0	0	4	13	5	17	
Rocky Mtn. Spotted Fever	0	0	1	0	0	1		0	0	1	3	0	3	0	
Tularemia	0	0	1	1	3	0		0	0	0	5	6	10	7	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious)
Encephalitis (viral/arbo-viral) -3
Granuloma Inguinale
Kawasaki Disease -5
Legionnellosis -1
Leptospirosis
Lymphogranuloma Venereum
Malaria -2
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome -2
Trichinosis

Outbreaks

Foodborne/waterborne -1
Histoplasmosis
Nosocomial
Pediculosis
Scabies
Other -2

* *Reporting Period Beginning* Feb 29, *Ending* April 30.

** *Totals do not include KC, SLC, or SLCo.*

*** *State Institutions*

Due to data editing, totals may change.

1987 RABIES SUMMARY

(Information supplied by Bureau of Veterinary Public Health)

INTRODUCTION

The national trend for six consecutive years shows that cat rabies cases outnumber dog rabies. In 1986, there were 166 cases of cat rabies and 95 of dog rabies in the United States. In evaluating rabies incidence of neighboring states, activity appears to have leveled off in Illinois. The number of rabies cases in Illinois was 46 for each of the years 1986 and 1987. Wildlife rabies was limited to two species, skunk (30) and bat (12), the same as Missouri. Domestic rabies was also limited to two species, the bovine (2) and dog (2). Rabies cases were dispersed throughout the state without any specific pattern.

Rabies in Iowa was radically different, increasing by 42 percent between 1986 to 1987. The increase was primarily in skunks, the reservoir species, which increased from 99 to 161 cases. Rabies activity in Iowa saw its largest increase in the eastern and southern counties of that state.

Iowa had its first case of caged ferret rabies in 1987. The virus isolated was identified by the Centers for Disease Control as skunk-like. This was the twelfth case of ferret rabies diagnosed since 1950 in the United States.

The national issue of maintaining ferrets as pets, aside from mutilating injuries, is complicated by the rabies issue. A rabies vaccine for ferrets has not been approved, nor is there an accepted observation period for signs of rabies in the ferret. Therefore, if the ferret has ever been outdoors, even within its cage, there are only two courses of action when a person is bitten. The first is to provide rabies post-exposure treatment to the individual, an acceptable but expensive procedure. The second alternative is to euthanize the ferret and examine its brain for rabies. Most ferret owners are unaware of their liability. The American Veterinary Medical Association, National Association of State Public Health Veterinarians, Conference of State and Territorial Epidemiologists, and United States Animal Health Association have recommended that ferrets and exotic animals not be kept as pets.

MISSOURI

Past rabies trends in Missouri indicate the disease moves from the northeast to the southwest. Missouri experienced a decrease in the number of animal rabies cases from 75 cases in 1986 to 59 cases in 1987. There were 59 cases of rabies in 1987. Most of the cases of rabies in 1987 occurred south of the Missouri River, as they normally do. In 1986, there were 2,513 animals examined and 2,486 were examined in 1987 (see Table 1).

Table I

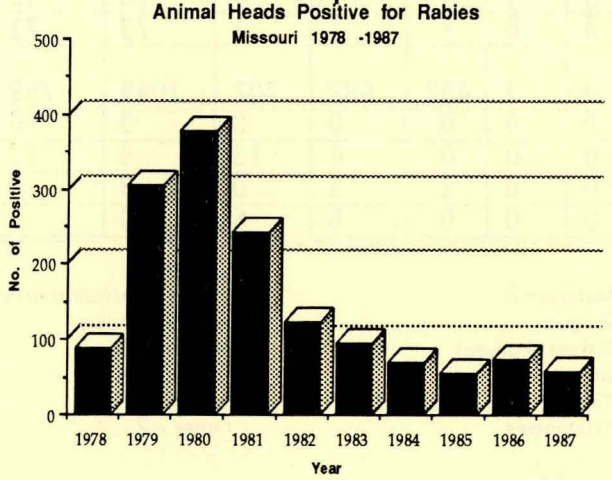
POSITIVE CASES PER TOTAL EXAMINATIONS
MISSOURI 1978-1987

Year	CASES	EXAMS	% POSITIVE
1978	95	1,658	5.7
1979	307	3,227	9.5
1980	379	3,448	11.0
1981	243	2,530	9.6
1982	123	2,399	5.1
1983	96	2,538	3.8
1984	70	2,237	3.1
1985	59	2,200	2.6
1986	75	2,513	3.0
1987	59	2,486	2.3

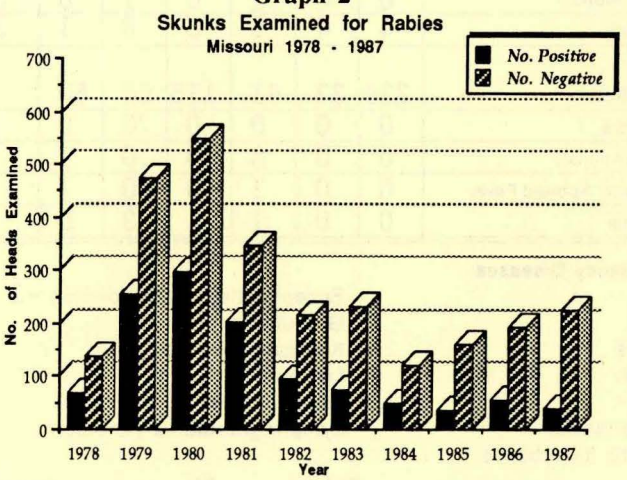
Examinations of the various species were also within limits with six of the eight species categories for 1987 showing increased surveillance. Although skunk census figures are not available, the Missouri Department of Conservation does not feel that skunk populations are as high as they appeared to be in 1979-80. This would explain the lag time in the normal cycle of rabies epidemics which occurs every seven years (see Graphs 1 and 2).

Skunks and bats were the only wildlife species reported as being affected by rabies, with 38 skunk and 15 bat cases confirmed. Domestic animal rabies was reported in only two species with five cats and one dog confirmed as rabid. ■

Graph 1



Graph 2



Missouri EPIDEMIOLOGIST

Volume X, Number 4 *July-August 1988*

Asbestos Update

Terry L. Hopper, Industrial Hygienist, Bureau of Environmental Epidemiology

Introduction

Missourians are becoming increasingly aware of the health hazards associated with exposure to asbestos. Public health officials are working closely with state and federal agencies to inventory the asbestos problem in public and private buildings. Once buildings are identified to contain friable asbestos, plans for abatement or management of the area are reviewed by Department of Health (DOH) officials and the owners. The following priority groups have begun to address their asbestos problems.

Public and Private Schools

The General Assembly in 1986 passed legislation requiring all public, private and parochial schools in Missouri to report to DOH whether or not their facilities have friable/non-friable asbestos. Each report must identify location, square footage, average number of persons exposed, percent of asbestos in the material and plans for removal or management of materials. This information was required by March 1, 1987. The DOH is charged with providing an annual report to the Department of Elementary and Secondary Education identifying public school districts with friable asbestos in their buildings.

In October 1986, President Reagen signed into law the Asbestos Hazard Emergency Response Act (AHERA) Public Law 99-519. AHERA requires all public, private and parochial elementary and secondary schools to inspect for friable/non-friable asbestos, develop management plans to address the asbestos hazards in their school buildings, and implement response actions in a timely fashion. The Local Education Agencies (LEAs) must use accredited personnel to conduct inspections, develop management plans, and design and carry out response actions. LEAs must submit an asbestos management plan to the DOH for approval/disapproval. DOH has four accredited inspectors-management planners who are responsible for reviewing more than 3,000 management plans.

The DOH applied for and was awarded a $1 million grant by the Environmental Protection Agency (EPA) to provide assistance to LEAs for asbestos inspection and management plan development. A total of 503 schools were awarded grants totaling $992,963 for inspections of 49,650,000 square feet of school building space.

Political Subdivisions

Political subdivisions are required to assess asbestos in all buildings that they own, lease or operate and to report their findings to DOH. This assessment was to be completed by December 31, 1987, however the 1987 General Assembly extended the deadline to December 31, 1990. The 1,047 political subdivisions in Missouri own or operate an estimated 44,000 buildings. DOH personnel are providing assistance to these subdivisions by conducting inspections of their facilities. As of January 1, 1988, DOH has received 251 requests. As of June 30, 1988, DOH has completed 130 inspections. The total square footage inspected during this period was 8,806,683, saving political subdivisions more than $440,000 (square footage x $.05 average cost of inspection per square foot).

Training

DOH personnel attended a two-day training seminar sponsored by the EPA Region VII Office in Kansas City. This seminar provided information for reviewing management plans and procedures LEAs must follow to apply for extension of the October 12, 1988 for submission of management plans deadline. Upon written request of an LEA, an extension can be given through May 9, 1989. Unfortunately, guidelines for the extension are stringent and few Missouri LEAs are likely to be eligible for the extension.

For more information, contact the Bureau of Environmental Epidemiology, 314/ 751-6102. ■

Inside this Issue...

Penicillinase-Producing *Neisseria Gonorrhoeae* (PPNG) Update

Ray Bly, Chief, Bureau of Sexually Transmitted Diseases

Infections caused by strains of *Neisseria gonorrhoeae*, which are resistant to standard recommended treatment schedules, continue as a growing public health problem. In 1986, penicillinase producing *Neisseria gonorrhoeae* (PPNG) infections accounted for appproximately 2 percent of gonorrhea reported in the United States, a 90 percent increase over the 1985 percentage. The majority of PPNG cases were reported in Florida, New York and California[1].

Antimicrobial resistance in the gonococcus can be plasmid mediated, chromosomally mediated or both. Many variations have been identified in this country. The three most common and most important variations are penicillinase producing *Neisseria gonorrhoeae*, chromosomally mediated resistant *Neisseria gonorrhoeae* (CMRNG), and plasmid mediated high level tetracycline resistance *Neisseria gonorrhoeae* (TRNG). [2]

MISSOURI

Missouri continues to report small and sporadic outbreaks of PPNG which occur mostly around larger population centers. Each of these outbreaks has responded to disease intervention efforts and has been controlled or eliminated with the exception of the Kansas City outbreak.

At present, beta-lactamase testing is being performed on all positive culture isolates for *Neisseria gonorrhoeae* in Missouri health department laboratories. Sensitivity testing for penicillin, tetracycline and spectinomycin resistance is being performed on all positive isolates in the St. Louis City Health Division Laboratory. The State Public Health Laboratory is performing sensitivity tests upon request, on treatment failures, and on positive beta-lactamase screens. Sensitivity testing is expected to begin in the Kansas City Health Department Laboratory for all positive gonococcal culture isolates in the near future.

KANSAS CITY

The outbreak of PPNG which began in Kansas City during the last four months of 1986 resulted in 44 cases being reported for calendar year 1986. In 1987, the Kansas City outbreak continued with a total of 186 cases reported. In calendar year 1988, 116 cases were reported between January 1 and June 30,1988.

Intensive disease intervention activites have continued in Kansas City and have resulted in reducing the uncontrolled spread of the infection.

The PPNG cases currently being reported in Kansas City account for 4.8 percent of the total gonorrhea morbidity in that city. This level of reporting has resulted in designating PPNG as hyperendemic (PPNG >3 percent) in the Kansas City area and requiring an intensified targeted program with adjusted treatment schedules and intensified disease intervention efforts.

A high percentage of PPNG patients being diagnosed in Kansas City are prostitutes, their associates and drug users. These patients are often transient and difficult to locate and to motivate to report for examination and treatment. These problems have made disease intervention activities much slower than is normal and in some cases more dangerous for the disease intervention specialist.

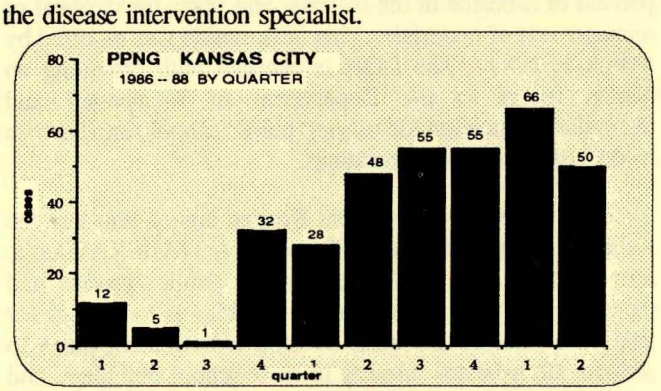
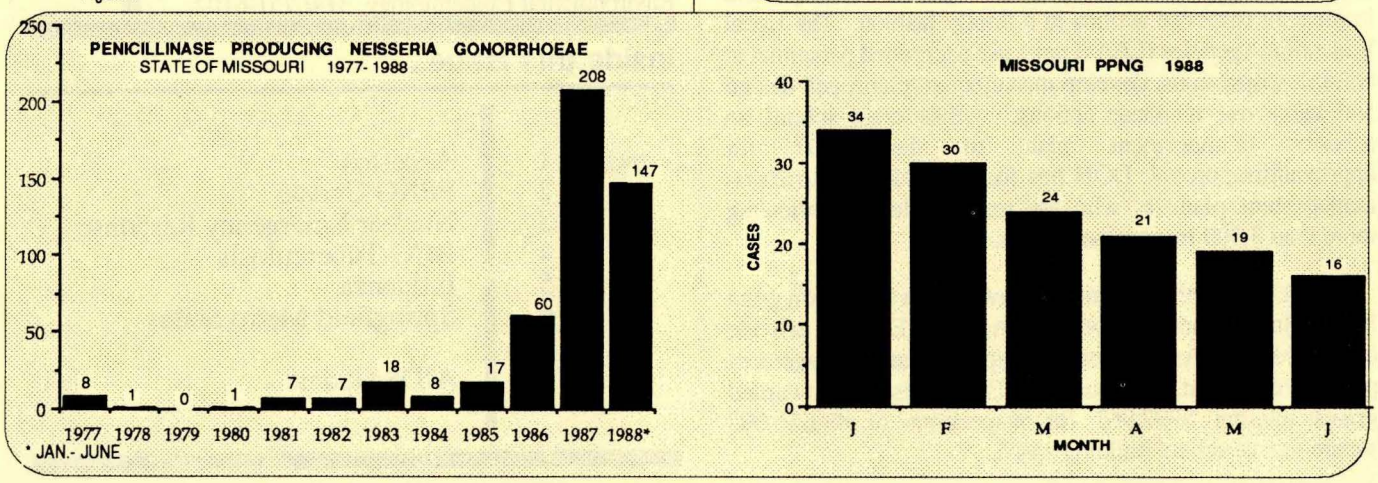


Figure I



(PPNG Cont'd)

RECOMMENDATIONS

The Bureau of Sexually Transmitted Diseases recomends the following diagnostic and treatment guidelines for all patients seen and evaluated for gonorrhea in the Kansas City area.

1. Test all patients who may have gonorrhea and their sex partners for *N. gonorrhoeae* with selective gonococcal culture medium.

2. Test all *N. gonorrhoeae* positive isolates for beta-lactamase production.

3. Use either spectinomycin 2 gm intramuscularly (IM) or ceftriaxone 250 mg IM as the drug of choice for all patients who are treated for gonococcal infection. Each of the above treatment regimens should be followed with a seven-day tetracycline/doxycycline regimen which will be adequate to cure any coexisting *Chlamydia trachomatis* infections.

4. Treat preventively with the above treatment regimens all sex partners of patients suspected to have gonococcal infection

5. Report all gonorrhea and resistant gonorrhea to your local health department or the Missouri Department of Health, Bureau of Sexually Transmitted Diseases.

6. Request disease intervention (patient interview and contact follow-up) assistance from your local health department or the Missouri Department of Health, Bureau of Sexually Transmitted Diseases, for PPNG and other resistant gonorrhea cases.

References
1 CDC, PPNG, US 1986, *MMWR* 1987, 36: 107-8.
2 CDC, Supplement, Antibiotic-Resistant Strains of Neisseria gonorrhoeae, *MMWR* Sept.11,1987, Vol 36/No. 5S

For further information, contact the Bureau of Sexually Transmitted Diseases, 314/ 751-6141. ■

Cooperative Planning and Exercises for Nuclear Emergency Response

Ken Miller, Chief, Bureau of Radiological Health

The probability of a serious accident at a nuclear power plant is very remote, however, the consequences could be both severe and widespread. Prudence demands planning for such an event, however unlikely the occurrence, and extensive planning within the industry and at all levels of government is underway.

The U.S. Nuclear Regulatory Commission (NRC) requires nuclear utilities to develop emergency response plans and to coordinate their plans with those of the state and local jurisdictions in proximity to the power plants. The utilities' plans address both on-site conditions, where the NRC retains jurisdiction, and off-site conditions, where the state has jurisdiction. State and local plans address only off-site conditions. The Callaway Nuclear Power Plant, located in Callaway County and the Cooper Nuclear Power Station at Brownville, Nebraska, are addressed in Missouri's nuclear emergency response plans. Both provide state officials with essential data and allow space in their emergency facilities for state personnel. The utilities' health physics personnel also coordinate activities and decisions with state officials.

Nuclear utilities are required to test, or exercise, their plans annually. State and local agencies are required to participate in those exercises periodically in order to maintain plans approved by the Federal Emergency Management Agency. Those exercises provide an opportunity to demonstrate the effectiveness of plans, the ability to implement plans, and to identify and correct any weaknesses.

Two agencies, the State Emergency Management Agency (SEMA) and the Bureau of Radiological Health, share primary responsibilities in nuclear power plant exercises. SEMA is responsible for notification, communications, public information, news releases, and coordination of activities with other agencies. The Bureau of Radiological Health is responsible for field monitoring, analysis and evaluation of data, dose projections, control of exposure to emergency workers, and protective action recommendations. Both agencies also provide training to other personnel.

In the past, most exercises have emphasized the plume exposure pathway - the area within approximately 10 miles of the power plant. Recent scenarios have extended the area of concern to include the ingestion pathway, a 50 mile radius of the plant, and to encourage planning for recovery efforts over a longer period of time. That trend is expected to continue, as will re-evaluation, training, and planning.

For more information, please contact the Bureau of Radiological Health, 314/ 751-6083. ■

Bacille Calmette-Guerin (BCG) Vaccinations and the Tuberculin Skin Test

Bert Malone, Chief, Bureau of Tuberculosis Control

The Missouri Department of Health, in accordance with guidelines of the Centers for Disease Control and the American Thoracic Society, recommends tuberculin testing for individuals arriving in Missouri from countries with high rates of tuberculosis. Many of these countries conduct vaccination programs against tuberculosis with *Bacille Calmette-Guerin* (BCG) and, as a result, it becomes difficult to determine individuals who are truly infected or have acquired tuberculin sensitivity from the BCG.

BCG vaccination usually results in the acquisition of tuberculin sensitivity, but the degree of sensitivity is often highly variable, depending on such factors as the strain of vaccine used, dosage, method of adminstration, age and nutritional status of the individual being vaccinated, as well as other factors. There are data to suggest that the persistence of sensitivity is highly variable. As a result, there is no reliable method to distinguish tuberculin reactions caused by BCG from those caused by natural infections with *M. tuberculosis*. Therefore, it is generally accepted to consider significant reactions ($\geq$ 5 mm induration in contacts and $\geq$ 10 mm induration in others) to indicate infection with *M. tuberculosis*. It becomes important that individuals who have significant reactions to tuberculin and a history of previous vaccination with BCG, be managed as any reactor. In such cases the individuals should be examined for the presence of active disease. If no active disease is detected, preventive therapy with isoniazid (INH) should be considered.

The decision to assume that a vaccinated reactive individual has natural infection with *M. tuberculosis* is based on a number of factors. Some studies have shown that conversion rates after vaccination is less than universal. Secondly, the average reaction size among individuals receiving BCG is often less than 10 mm. Finally, studies have indicated that tuberculin sensitivity wanes considerably after vaccination. Since the protective effect of BCG vaccination probably does not persist for more than 15 years, it can be assumed that sensitivity to tuberculin also wanes over that time.

References:
American Thoracic Society, Centers for Disease Control: The tuberculin skin test. Am Rev Respir Dis 1981;124:356-363.
Farer, LS: Prior BCG vaccination and PPD skin test. JAMA 1983; 250:3106.
Snider, DE: Bacille Calmette-Guerin vaccination and tuberculin skin test. JAMA 1985; 253:3438-3439.

Additional information on BCG vaccination, as well as associated information regarding the extent of vaccination programs throughout the world, is available from the Bureau of Tuberculosis Control at (314)751-6122. ■

INFLUENZA

The following information is excerpted from the June 17, 1988 issue of *Morbidity and Mortality Weekly Report*, Published by the Centers for Disease Control, Atlanta, Georgia

Typical influenza illness is characterized by abrupt onset of fever, sore throat, and nonproductive cough. Unlike many other common respiratory infections, it can cause extreme malaise lasting several days. More severe illness can result if influenza virus invades the lungs (primary viral pneumonia) or if secondary bacterial pneumonia occurs. High attack rates of acute illness and lower-respiratory-tract complications during influenza epidemics usually result in dramatic increases in visits to physician's offices, walk-in clinics, and emergency rooms by persons of all ages.

Elderly persons and those with underlying health problems are at increased risk for complications of influenza infection. Such high-risk persons are more likely than the general population to require hospitalization if infected. Previously healthy children and younger adults occasionally are hospitalized for influenza-related complications, but the relative increase in their hospitalization rates is much less than that for high-risk groups.

Because the proportion of elderly persons in the U.S. population is increasing, and because age and its associated chronic diseases are risk factors for severe influenza illness, the toll from influenza can be expected to increase unless control measures are used more vigorously. The number of younger persons at high risk for infection-related complications is also increasing for various reasons, such as the success of neonatal intensive-care units, better management of diseases such as cystic fibrosis, better survival rates for organ-transplant recipients, and the spread of HIV infection.

Two measures are available in the United States to reduce the impact of influenza: immunoprophylaxis with inactivated (killed virus) vaccine and chemoprophylaxis or therapy with the antiviral drug amantadine. Vaccination of high-risk persons each year before the influenza season is the single most important measure for reducing the impact of influenza.

(Influenza Cont'd)

Influenza vaccine is recommended for (1) high-risk persons ≥6months of age and their medical-care providers or household contacts; 2) children and teenagers receiving long-term aspirin therapy who, therefore, may be at increased risk of developing Reye syndrome after an influenza virus infection; and 3) other persons who wish to reduce their chances of acquiring influenza.

Inactivated influenza vaccine should not be given to persons who have an anaphylactic hypersensitivity to eggs. Persons with acute febrile illnesses normally should not be vaccinated until their temporary symptoms have abated. For more information regarding influenza, contact your local health department or the Bureau of Immunization, 314/ 751-6133. ■

Study of Residential Radon and Lung Cancer Underway in Missouri

Ross Brownson, Ph.D., Chief, Bureau of Cancer Epidemiology and Control

The Bureau of Cancer Epidemiology and Control, in collaboration with the National Cancer Institute, is currently conducting a case-control study that is designed to clarify the relationship between household exposure to radon and lung cancer among women.

Radon is an odorless, colorless, radioactive gas that is produced from the decay of uranium in soils and rocks. It was first identified as a potential carcinogen in the early 1900s when excess lung cancer was noted among underground miners. Since these early observations, numerous studies have identified a direct relationship between radon exposure and lung cancer in uranium and metal miners.

The risk of lung cancer in relationship to low level, residential exposure to radon is less clear. Risk estimates for low level exposure have been extrapolated from occupational studies among underground miners, who have been exposed to relatively high radon levels and many of whom smoke. Since smoking is clearly the largest risk factor of lung cancer, a study of lung cancer among nonsmokers, light smokers, and ex-smokers is a likely design to test the radon hypothesis.

The National Cancer Institute is currently funding four studies of the associaton between residential radon and lung cancer. In addition to the Missouri study, others are being conducted in New Jersey, China and Sweden.

Cases for the Missouri study are being identified through the Missouri Cancer Registry. One reason Missouri was chosen as a study site was that the registry obtains information on smoking status as part of incidence reporting. Case ascertainment for the study began on January 1, 1988. To be eligible for inclusion in the study, a case must be a white female with a confirmed diagnosis of lung cancer who was a nonsmoker, a smoker for a total of one year or less, or an ex-smoker who quit at least 15 years ago. It is expected that approximately 250 cases will be identified for the study over the two and one-half year ascertainment period.

Controls for the study are drawn from two different sources. Controls age 64 years and younger are being chosen from Missouri driver license records. Older controls are being chosen from Medicare files. After the initial random selection, controls are matched to cases on the basis of race, smoking status, and age group. It is expected that approximately 500 controls will be identified for the study.

Following contact with all subjects and the case's physician, cases and controls are telephoned and asked to participate in an interview. The telephone interview includes questions on their previous residences, passive smoke exposure during childhood and adulthood (at home and at work), family history of cancer, history of other lung diseases, occupational exposures, and a brief dietary assessment. Respondents also are asked if they would allow two small track-etch radon detectors to be placed in their current home.

After interview information is obtained, field technicians will place two radon detectors in each current and previous home of cases and controls. One detector is placed in the bedroom and one in the kitchen. Another reason that Missouri was chosen for the study is that, based on a pilot study, Missourians are more residentially stable than people in many other areas and, therefore, determination of previous radon exposure is more feasible.

Progress on the study has been excellent to date. More than 90 percent of cases and controls have agreed to participate in the study and more than 90 percent of respondents' previous residences have been located and had radon dosimeters placed in them. Preliminary results for selected study variables are expected in late 1989, with final results available in late 1990 and early 1991. ■

Springfield/Greene County Designated Metropolitan Health Area...

Effective July 1, 1988, Springfield and Greene County will be included among other metropolitan health areas for reporting of health statistics. Data for this area pertaining to communicable and other diseases will be tabulated separately from other counties in the southwestern district, but will continue to be included in the totals for the district. These changes will appear in the Bimonthly Morbidity Report for July and August which will accompany the next issue of the Missouri Epidemiologist.

Please take a few minutes to update our mailing list

The Missouri Epidemiologist is provided free of charge by the Division of Environmental Health and Epidemiology. Approximately 9,500 copies are mailed including primary and secondary physicians, hospitals, state and local health departments, veterinarians, and public libraries. The newsletter was developed as a method of providing surveillance data regarding communicable and infectious diseases to physicians as well as provide current information on environmental and epidemiological information. Your suggestions are welcome.

Do you find reprinted materials beneficial? (i.e., MMWR and JAMA) _____

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MISSOURI DEPARTMENT OF HEALTH - Epidemiology Services - Communicable Disease Control

BIMONTHLY MORBIDITY REPORT

Reporting Period * May and June, 19 88.

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	2 MONTH STATE TOTALS		CUMULATIVE		
	** NW	NE	CD	SE	SW	** ED	*** OTHER				1988	1987	FOR 1988	FOR 1987	5 YEAR MEDIAN
Vaccine Preventable Dis.															
Chickenpox	4	20	18	6	8	582		0	0	0	638	919	7004	6840	
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	
Influenza	0	0	1	0	1	1		4	1	1	9	0	86	57	
Measles	0	0	0	0	0	0		0	0	0	0	82	0	118	
Mumps	2	0	0	3	0	2		0	0	1	8	6	30	19	
Pertussis	0	0	1	0	0	0		0	0	0	1	4	6	17	
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	
Rubella	0	0	0	0	0	0		0	0	0	0	0	0	0	
Tetanus	0	0	0	0	0	0		0	0	0	0	0	1	0	
Viral Hepatitis															
A	50	0	2	4	8	1		53	0	1	119	34	376	78	
B	9	7	16	7	12	3		21	11	15	101	62	300	194	
Non A - Non B	4	0	1	1	1	1		2	0	1	11	6	28	20	
Unspecified	0	0	0	0	0	0		0	2	0	2	3	8	10	
Meningitis															
Aseptic	3	1	0	1	4	1		2	0	1	13	19	28	39	
H. influenza	4	1	3	2	1	3		8	6	2	30	15	67	69	
Meningococcal	0	0	0	1	2	1		0	0	2	6	4	23	20	
Other	1	1	0	2	0	2		2	0	0	8	10	28	40	
Enteric Infections															
Campylobacter	9	0	8	14	14	8		7	8	24	92	54	173	110	
Salmonella	7	4	10	8	9	13		5	8	20	84	93	241	257	
Shigella	0	1	6	4	36	33		0	23	9	112	28	265	60	
Typhoid Fever	0	0	0	0	0	0		0	0	0	0	0	2	3	
Parasitic Infections															
Amebiasis	0	0	0	2	0	0		0	0	0	2	1	13	4	
Giardiasis	22	3	16	6	13	9		9	6	7	91	65	184	225	
Toxoplasmosis	1	0	0	0	0	0		0	0	0	1	28	6	73	
Sexually Transmitted Dis.															
AIDS	6	0	2	0	3	3		50	16	7	87	26	205	105	
Gonorrhea	96	25	90	66	58	34		910	814	271	2364	2861	7334	8098	
Genital Herpes	33	4	15	10	10	13		83	102	39	309	170	1013	693	
Nongonococcal urethritis	33	8	55	28	7	18		259	535	244	1186	1314	3702	3872	
Primary & secondary syphilis	0	0	0	1	1	0		18	3	0	23	16	61	38	
Tuberculosis															
Extrapulmonary	0	1	4	0	0	0	0	0	0	2	7	15	17	33	
Pulmonary	3	0	5	10	7	0	4	6	2	5	42	59	115	127	
Zoonotic															
Animal Bites	83	30	34	68	37	461		2	0	58	773	760	1822	1559	
Psittacosis	0	0	1	0	0	0		0	0	0	1	1	1	1	
Rabies (Animal)	0	0	0	1	1	1		0	0	0	3	11	9	28	
Rocky Mtn. Spotted Fever	0	0	4	6	3	2		0	1	1	17	4	19	4	
Tularemia	0	2	4	7	1	0		0	0	0	14	6	23	14	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis -1
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious) -5
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease
Legionnellosis -8
Leptospirosis
Lymphogranuloma Venereum
Malaria
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome
Trichinosis

Outbreaks

Foodborne/waterborne - 1
Histoplasmosis
Nosocomial
Pediculosis
Scabies
Other - 3

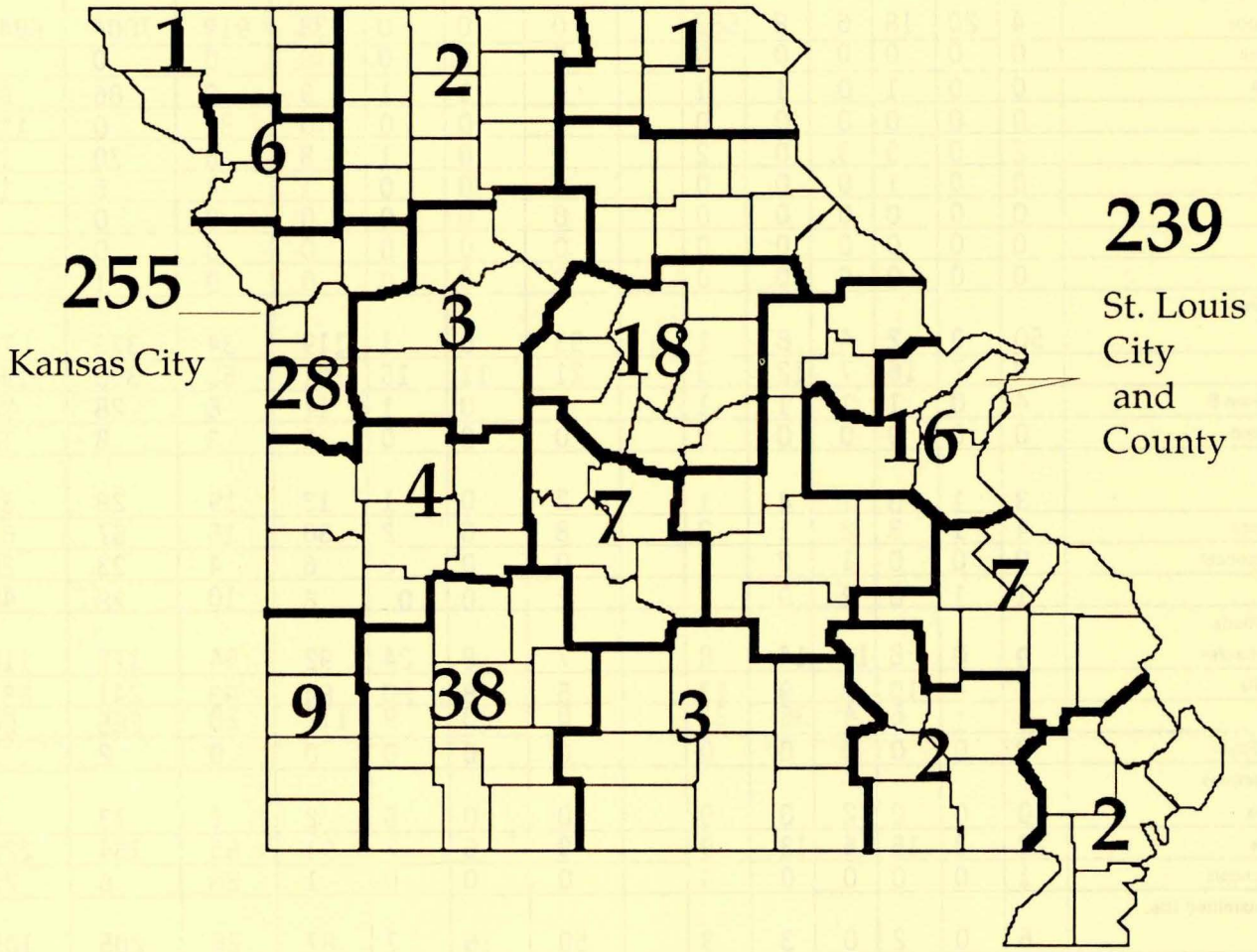
** Reporting Period Beginning May 01, Ending July 01.*

*** Totals do not include KC, SLC, or SLCo.*

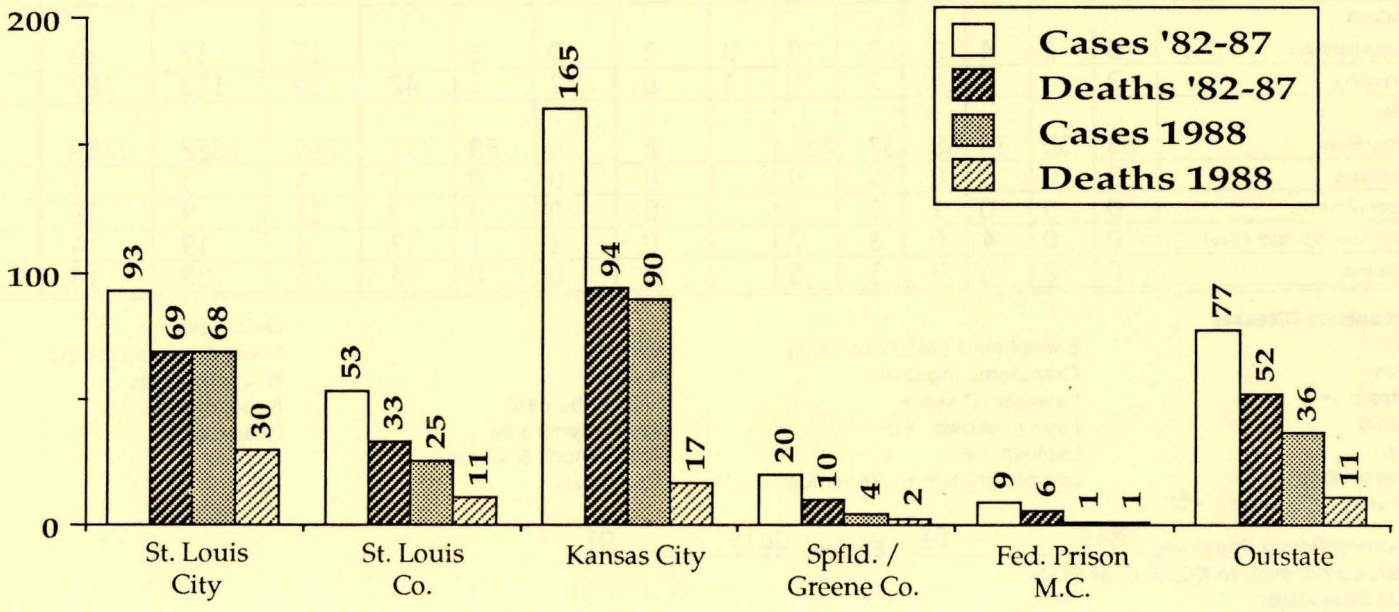
**** State Institutions*

Due to data editing, totals may change.

Cases Reported in Missouri by Region, 1982-to Date



Comparison of Cases Reported in Missouri, 1982 to Date

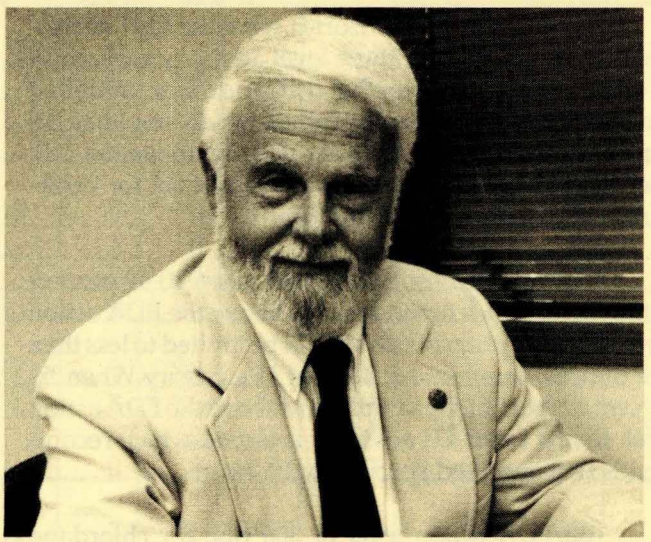


Missouri
EPIDEMIOLOGIST

Volume X, Number 5 *September-October 1988*

Farewell to Environmental Health and Epidemiology Leader

Dr. John R. Bagby has announced that he is leaving Missouri to continue public health activities in other areas effective November 11. Dr. Bagby has directed the Division of Environmental Health and Epidemiology for the last four years. A native of Missouri, Dr. Bagby has worked over forty years in public health activities including 28 years with the national Centers for Disease Control in Atlanta serving as Deputy Director from 1964-1969. He was Head of the Department of Microbiology and Environmental Health at Colorado State University (CSU), Fort Collins, where he taught microbiology, environmental health and epidemiology during 1969-1984. Upon his successful career of teaching at CSU, was honored by the University by establishment of the John R. Bagby Scholarship in Environmental Health, an annual award to recognize the outstanding environmental health student.



During his tenure in Missouri, several legislative goals were reached including several bills pertaining to the environment which were passed in the General Assembly and signed into law. These included a bill relating to the identification and abatement of asbestos; the reporting of toxic substance storage to DOH and local fire districts; and regulation of on-site sewage disposal systems in the state. Most recently, a comprehensive AIDS bill was passed. Dr. Bagby was instrumental in the creation of the Governor's State Agency AIDS Task Force, and served as its Chairman. This Task Force, which had representation from several cabinet level agencies, was one of the first in the nation to publish "State Guidelines for Acquired Immune Deficiency Syndrome," a reference tool for state workers. This publication was well-received in other state health departments.

On September 16, 1988 Dr. Bagby was presented with Resolutions from the Missouri House of Representatives and Missouri Senate honoring him for his dedication and contributions to promoting public health in the state. Governor John Ashcroft also sent a personal letter of congratulations and commendation for Dr. Bagby's service to public health.

Dr. Bagby is not retiring from public health; his future plans include teaching a public health course at Colorado State University. He also plans to continue providing consultation in international health, primarily program reviews of tropical medicine projects. Although he has left the state to continue his career, his accomplishments for public health will impact the future health and environment of Missouri citizens for decades. ■

Inside this Issue...

Health Advisories Released For Chlordane-Contaminated Fish From Missouri Rivers and Lakes

John R. Crellin, Ph.D.
Consultant Epidemiologist
Division of Environmental Health and Epidemiology

In May, the Missouri Department of Health issued new and revised advisories for 28 areas of Missouri including portions of the Mississippi, Missouri, James, Meramec, River and Little Blue Rivers. These advisories were based on fish taken throughout Missouri by the Missouri Department of Conservation in 1987.

The 1988 health advisories were the first advisories issued using a new three level advisory system. A **Level I** advisory indicates that fish are safe for unlimited consumption. This level is issued when less than 10 percent of the samples from an area are above the U.S. Food and Drug Administration (FDA) level for chlordane, i.e., 300 parts per billion (ppb).

A **Level II** advisory is issued when 10-49 percent of the fish samples for an area are above the FDA action level. Consumption of fish should be limited to less than five ounces/week under a **Level II** advisory.When 50 percent or more of the samples are above the FDA action level, then a **Level III** advisory is issued which recommends that specified species not be eaten.

The FDA action level of 300 ppb for chlordane represents an additional risk of cancer of one in 100,000 with a lifetime consumption of five ounces of fish/week. This amount is considered by FDA to be the average weekly amount of fish eaten per person in the U.S.

The Missouri River between Kansas City and Sibley and between Rocheport and Bonnots Mill is under a **Level III** (no eat) advisory for carp, channel catfish, bigmouth buffalo, and river carpsuckers. Shovelnose Sturgeon from the Rocheport/Bonnots Mill area are also under a **Level III** advisory.

A **Level II** advisory was issued for the Missouri River between Weldon Spring and the rivermouth. It is recommended that consumption of carp, river carpsuckers, and channel catfish from this area be limited to less than five ounces/week.

The Missouri River from Kansas City north to the stateline, between Sibley and Rocheport, and between Bonnots Mill and Weldon Spring is under a **Level I** advisory. All species are safe to eat.

Several areas of the Mississippi are on **Level II** or III advisories. Shovelnose Sturgeon and Sturgeon eggs from the confluence of the Illinois to the state line are under a **Level III** advisory. Also, under a **Level III** are carp and channel catfish from the Mississippi between the Jefferson Barracks Bridge in St. Louis and Brickeys which is north of St. Genevieve. Carp and channel catfish from the following portions of the Mississippi are on a **Level II** advisory; between the confluence of the Des Moines River and Canton, between the confluence of the Illinois River and Alton, and between Brickeys and the Arkansas state line. There is also a **Level II** advisory on channel catfish for between Clarksville and Winfield.

Of all the areas tested in Missouri, the lower 22 miles of the Meramec River showed the highest levels of chlordane contamination. All species from this area are on a **Level II** advisory. Channel catfish had levels as high as 2417 ppb, carp up to 563 ppb, and largemouth bass up to 493 ppb. Thirty-one of the 34 samples from seven species taken from this area over three years have been above the FDA action level.

Other areas placed under **Level III** advisories include: the Blue River in Kansas City from the Kansas border to the confluence with the Missouri River (carp and channel catfish); Wilson Creek (carp and channel catfish); Mark Twain Lake from four miles north of the Highway FF bridge to the Highway 24 Bridge (carp and river carpsuckers); and Creve Coeur Lake (carp and channel catfish).

Areas included under **Level II** advisories are Smithville Lake near Kansas City (channel catfish); the James River downstream from the confluence with Wilson Creek to where Piney Creek enters Table Rock Lake (carp, channel and flathead catfish); the Little Blue River from Hwy. I-470 bridge to the mouth of the river (carp); Lower Hulen Lake in Columbia (channel catfish); Dickerson Park Pond in Springfield (channel catfish), Terrace Lake in Kansas City (channel catfish); and Lake St. Louis in St. Charles County (carp, channel catfish).

Fish species in numerous other Missouri rivers and lakes were sampled for chlordane with no elevated levels found. These areas include: Lake of the Ozarks, Stockton Lake in Dade County, Spring River, Weatherby Lake in Platte County, Big River, and eight lakes in the Busch Wildlife Area in St. Charles County.

Health Advisories Cont'd

In the past, chlordane was widely used for treating homes for termites. It is suspected that contamination of fish by chlordane may be caused by runoff from urban areas where chlordane was injected below ground around building foundations. This may continue for many years even though the sale and use of chlordane was banned on April 15, 1988.

Chlordane belongs to the class of chemicals called the organochlorides. These chemicals cause acute symptoms such as headaches, nervousness, muscle twitching, poor coordination, gastrointestinal upset, fainting, and other health effects related to impairment of the central nervous system. Chlordane can cause chronic liver and kidney damage and is suspected to depress the immune system and cause behavioral changes. It is a confirmed animal and suspected human carcinogen.

The Missouri Department of Conservation will again do extensive testing for chlordane and other contaminants in Missouri fish in 1988. The Department of Health expects to update their advisories based on these new data.

If you would like more information about chlordane in fish, contact the Bureau of Environmental Epidemiology at 314/751-6102. ■

Toxics Information System Available

Gale Carlson, Environmental Specialist
Bureau of Environmental Epidemiology

The Bureau of Environmental Epidemiology is routinely involved in assessing risk to human health from hazardous substances. Requests come from private citizens, district and local health agencies, other state departments, private physicians, and various municipal agencies. Requests vary from simple - such as, will some level of a chemical cause me harm, to complex - we produce a variety of documents for the Department of Natural Resources that discuss exposure levels, health effects, and safe clean-up levels at hazardous waste sites throughout the state.

A variety of sources are utilized to provide an accurate and timely response to requests for toxicological information. Answers to some of the more general requests are obtained from in-house medical, toxicological, and chemical texts. In addition to these texts, extensive files on over 400 chemicals are accessible. When additional or more current information about a particular substance or chemical is needed, the worlds most extensive medical/toxicological computer reference system, developed and maintained by the National Library of Medicine is utilized. This system, called MEDLARS (Medical Literature Analysis and Retrieval System), includes twenty-nine separate computer databases in two separate but interactive main frame computers housed in Bethesda, Maryland.

As of July 1988, there were 11,553,184 separate unit records in this system. A unit record usually means a separate data set that is essentially a review of a published journal article. However, in the case of toxicological information, it usually includes many dozens of separate fields of information including:

Substance Identification; Manufacturing/Use Information; Chemical and Physical properties; Safety and Handling; Toxicity/Biomedical effects; Pharmacology ; Environmental Fate/Exposure Potential; Exposure Standards and Regulations; Monitoring and Analysis Methods; and Special References.

Several hundred separate pieces of information may be found within these fields. As an example, within the unit record for Chlordane there are over 125 scientific and medical references in the Toxicity/Biomedical effects field. Most of the databases within MEDLARS are updated monthly by a world-wide network of medical personnel who review periodicals within their speciality and input the pertinent information directly into the system by use of a compatible terminal and phone modem. This review and abstract information is then checked for accuracy by other reviewers and finally placed in the system for on-line (phone modem to user terminal) use.

This fall, the Bureau will begin accessing the Integrated Risk Information System (IRIS) database developed by the Environmental Protection Agency. This system summarizes risk assessment and regulatory information on over 250 of the most widely distributed hazardous chemicals. With the capabilities of numerous up-to-date medical and toxicological texts, a large in-house chemical information file system, MEDLARS, and IRIS, the Bureau of Environmental Epidemiology is able to answer a wide variety of questions concerning the toxic effects of chemicals within a short period of time. If you have questions concerning the toxic effects of chemical exposure, please call (314) 751-6102. ■

Mid-America Chlordane Group Organized to Address Fish Contamination

John R. Crellin, Ph.D.
Consultant Epidemiologist
Division of Environmental Health and Epidemiology

The Mid-America Chlordane Group was formed in 1987 to address chemical contamination of fish on a regional basis. The Missouri Departments of Health and Conservation and Illinois Department of Health were co-founders of the group. At the initial meeting, the members identified the lack of uniform procedures for collecting and analyzing fish samples for chemicals as the major problem when states tried to work together. It was noted that one method of analysis may give results two or three time higher than another method. This lack of uniformity made it difficult to compare data and issue health advisories for common waterways.

The group includes representatives from the state health, environmental and conservation departments of eight states; three regions of the U.S. Environmental Protection Agency; four offices of the U.S. Food and Drug Administration; U.S. Fish and Wildlife Service; Centers for Disease Control; and several other agencies.

The Mid-America Group, working through four separate sub-committees is confronting the problem by developing protocols for collecting fish and performing laboratory analyses. A protocol will also be developed for issuing health advisories. These protocols should be finalized by early 1989, and will be submitted to each participating state and federal agency for adoption.

For more information regarding the Mid-America Chlordane Group, contact Dr. John Crellin at 314/751-6079. ■

New Pamphlet "Understanding Pesticides" Available

The Bureau of Environmental Epidemiology has published a pamphlet "Understanding Pesticides" which addresses pesticides, their health effects, sources, and types of uses. Copies of this pamphlet are available through your local health department or by calling the Bureau at 314/ 751-6102 or 800/392-7245. ■

Missouri EPIDEMIOLOGIST

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MISSOURI DEPARTMENT OF HEALTH
DISEASE PREVENTION — COMMUNICABLE DISEASE CONTROL

BIMONTHLY MORBIDITY REPORT

Reporting Period *
July and August , 19 88

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	SPGFD	2 MONTH STATE TOTALS		CUMULATIVE FOR	CUMULATIVE FOR	5 YR MEDIAN
	** NW	NE	CD	SE	** SW	** ED	*** OTHER					1988	1987	1988	1987	
Vaccine Preventable Dis.																
Chickenpox	1	3	2	2	2	7	0	0	0	2	3	22	12	7026	6852	
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Influenza	0	0	1	0	0	0	0	1	0	5	0	7	0	93	57	
Measles	0	0	0	0	0	0	0	0	1	1	0	2	72	2	190	
Mumps	0	0	0	0	0	0	0	0	0	0	0	0	3	30	22	
Pertussis	2	0	2	0	1	0	0	3	0	1	0	9	7	15	24	
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Rubella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Viral Hepatitis																
A	58	1	1	3	17	1	0	75	0	5	0	161	91	537	169	
B	16	3	14	10	7	5	0	30	7	24	3	119	92	411	285	
Non A - Non B	3	0	0	1	0	0	0	0	0	1	0	5	8	33	28	
Unspecified	0	0	0	0	1	0	0	0	1	0	0	2	5	10	15	
Meningitis																
Aseptic	5	1	2	2	5	3	0	9	0	5	0	32	45	61	83	
H. influenza	6	0	0	0	1	0	0	1	6	0	0	14	9	81	78	
Meningococcal	2	0	1	1	0	0	0	0	0	0	0	4	5	24	25	
Other	5	0	0	0	1	1	0	0	0	0	0	7	8	35	48	
Enteric Infections																
Campylobacter	12	1	12	12	7	8	0	7	2	22	21	104	54	276	164	
Salmonella	13	7	31	16	22	22	0	21	18	36	35	221	151	460	408	
Shigella	4	0	9	5	13	8	0	2	6	10	41	98	152	360	210	
Typhoid Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	
Parasitic Infections																
Amebiasis	1	0	0	1	0	0	0	1	3	1	0	7	4	20	8	
Giardiasis	43	4	19	10	9	26	0	16	10	24	3	164	154	345	379	
Toxoplasmosis	0	0	0	1	0	0	0	0	0	0	0	1	3	12	76	
Sexually Transmitted Dis.																
AIDS	3	0	1	0	6	0	0	12	21	10	5	58	40	263	115	
Gonorrhea	126	26	126	52	50	31	0	1297	1096	403	53	3260	2849	10594	10947	
Genital Herpes	59	8	51	19	11	39	0	102	136	62	7	494	223	1507	916	
Nongonoc. urethritis	20	1	37	8	3	22	0	272	601	299	8	1271	1507	4973	5379	
Prim. & sec. syphilis	2	0	0	0	0	1	0	17	1	1	0	22	36	83	74	
Tuberculosis																
Extrapulmonary	1	1	0	1	1	0	1	1	2	3	0	11	7	28	40	
Pulmonary	1	1	6	3	4	2	0	9	8	2	3	39	61	154	188	
Zoonotic																
Animal Bites	104	33	33	60	27	18	0	2	0	747	1	1025	428	2847	1987	
Psittacosis	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Rabies (Animal)	0	2	1	7	1	5	0	0	0	0	0	16	13	26	41	
Rocky Mtn. Sp. Fever	2	0	4	3	4	0	0	0	0	0	6	19	12	37	16	
Tularemia	2	0	5	1	2	1	0	0	0	0	1	12	15	34	29	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis - 1
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious) - 3
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease
Legionnellosis - 3
Leptospirosis
Lymphogranuloma Venereum
Malaria - 2
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome - 3
Trichinosis

Outbreaks

Foodborne/waterborne - 4
Histoplasmosis
Nosocomial
Pediculosis
Scabies - 2
Other - 2 (Hep A's)

* *Reporting Period Beginning* July 3, *Ending* Sept 2.
** *Totals do not include KC, SLC, SLCo, or Springfield*
*** *State and Federal Institutions*

Due to data editing, totals may change.

MO 580-0490 (7-88)

Assistance for the Diagnosis and Treatment of Hansen's Disease

Bert Malone, Chief
Bureau of Tuberculosis Control

Hansen's disease (HD), formerly known as leprosy, is a chronic disease caused by *Mycobacterium leprae.* While the exact mode of transmission is unclear, it is believed that prolonged close contact with an infectious case is required for transmission to occur. Bacteria from nasal discharges of infectious patients enter through the skin or respiratory tract of susceptible individuals. There is also recent data to suggest a role of non-human environmental sources of *M. leprae* in the transmission of this infection.

The incidence of the disease in Missouri is extremely low, but with the continued influx of refugees and immigrants from areas of the world where HD is endemic, physicians in the state may, on occasion, observe symptoms suggestive of the disease. In order to assist physicians in the care and treatment for HD, a policy of the United States Public Health Service, Division of National Hansen's Disease Programs has been established to provide drugs free of charge.

These drugs will be provided through the National Hansen's Disease Center (NHDC) as a result of either a telephone or written request from private physicians, state, county, city health departments, or other health care agencies. Physicians or other appropriate individuals may request these drugs by contacting the NHDC at **800/642-2477**. Before providing the drugs, the requestor will be required to agree to the following:

1) To provide the NHDC a copy of the Centers for Disease Control (CDC) Leprosy Surveillance Form for all newly-diagnosed HD patients in order that the data can be included in the National HD Registry. – – OR

2) When the CDC Leprosy Surveillance Form for HD patients is not available and the patient is not listed in the National HD Registry the following minimum information must be provided prior to provision of drugs: a) Patient name; b) Date of birth; c) Sex; d) Race; e) Diagnosis; f) Date of diagnosis; g) Physician's name, address, and phone number

In addition to provision of drugs, the NHDC can provide testing of biopsies and skin smears as well as experienced consultation for difficult and manage cases. All services are provided free of charge. For more information, contact: Richard Kent Rudy, M.D., M.P.H. Regional Hansen's Disease Program, Gillis W. Long, Hansen's Disease Center, Carville, Louisiana 70721-9607, Tel: 800-642-2477

Hansen's Disease is a reportable condition in Missouri and should be reported through your local health agency on a confidential Disease Case Report Card (CD-1) or by calling **800/392-0272.** ■

Mahree Bright named as Chief, Bureau of Communicable Disease Control

Mahree Bright began her duties as Chief, Bureau of Communicable Disease Control on October 1. She replaces Margaret Spurrier who retired earlier this year.

Mahree joined the Department of Health in 1980 as an Immunization Program Representative for the Central Health District and later was transferred to the central office as a Health Program Representative III and Assistant Bureau Chief of Immunizations. In September 1986, she joined the Bureau of Communicable Disease Control and was named Acting Bureau Chief in February 1988. During that time, she coordinated statewide disease surveillance, investigation and outbreak control activities which included implementing and standardizing statewide active surveillance for communicable diseases. She was also instrumental in implementing direct computer reporting of communicable disease morbidity and mortality reports to the national Epidemiologic Surveillance Project at the Centers for Disease Control.

Other than performing outbreak investigations, one of the first tasks for Mahree as Bureau Chief will be placing communicable disease coordinators in each district health office. It is hoped that these coordinators will be in place by early next calendar year to assist in performing statewide surveillance and outbreak investigation activities. ■

Missouri
EPIDEMIOLOGIST

Volume X, Number 6 *November-December 1988*

Egg-Associated *Salmonella enteritidis*

Robert C. Brady, D.V.M., Epidemic Intelligence Service Officer
F.T. Satalowich, D.V.M., M.S.P.H., Bureau of Veterinary Public Health

Background

A recent article[1] has demonstrated intact USDA grade-A eggs to be a previously unrecognized source of salmonellosis. The serotype implicated is *Salmonella enteritidis*. The authors reported 65 outbreaks and at least 2,119 cases during the period January 1985 to May 1987. Of reported cases, 257 patients (12 percent) were hospitalized and 11 (0.5 percent) died. Outbreaks occurred in restaurants, schools, nursing homes, private homes, bakeries, catering establishments, and hospitals. Eggs were implicated in 27 (77 percent) of 35 outbreaks with known vehicles.

Intact eggs with clean shells were previously considered sterile and not subject to the storage, cooking, and handling precautions normally exercised with other raw foods of livestock origin. Raw or undercooked eggs are evidently often consumed by Americans, either by themselves or in foods such as homemade ice cream, homemade mayonnaise, Hollandaise sauce, egg nog, French toast mix, Monte Cristo sandwiches, and egg dip.

Missouri

While *S. enteritidis* isolations have increased substantially in the Northeast, they have remained fairly constant in Missouri. Table 1 shows the numbers of *S. enteritidis* isolations recorded at the Missouri State Health Laboratory since 1982. In 1986, the proportion of all salmonella isolations made up by *S. enteritidis* was 28 percent in the Northeast, while for the rest of the United States (including Missouri), it was eight percent. In 1987, *S. enteritidis* isolations comprised 16 percent of salmonella isolates nationwide, with high isolation rates in the northeast, mid-Atlantic, and south Atlantic regions[2], but only 5.9 percent of Missouri isolates were *S. enteritidis*. No outbreaks have occurred in Missouri, and no cases were known to be linked to eggs. Health care providers are encouraged to report all cases of salmonella infection to their local health department or the Department of Health, and to specifically point out any suspected involvement of eggs.

Eggs as Source

Eggs become contaminated with *S. enteritidis* secondary to ovarian infection in the hen. The yolk is infected at ovulation, before the shell forms around the egg. A poultry farm in Missouri recently purchased day-old chicks later found to be infected with *Salmonella enteritidis*. If the affected flocks go into egg production, all eggs produced by these flocks will be pasteurized. The Department of Health has issued warnings to food service establishments, hospitals, nursing homes and the general public to handle eggs as potentially hazardous foods so that if infected with salmonella, bacterial growth will be minimized.

It is not known what percent of hens in infected flocks are infected by *S. enteritidis*, or what percent of eggs laid by infected birds are contaminated. Estimates by those studying the problem are that about 10 percent of birds in affected flocks are infected and less than one percent of eggs from such birds are contaminated. It is believed that stress precipitates shedding of salmonella in eggs, thus the proportion of infected eggs will vary.

Reliable serologic tests for screening poultry flocks for *S. enteritidis* are presently unavailable. Should these tests be perfected, the logisitics and cost of testing some

Inside this Issue...

Table 1
***Salmonella enteritidis* Isolations**
Missouri State Health Laboratory
1982 - 1988*

Year	*S. enteritidis* Isolations	Total Salmonella Isolations	Percentage *S. enteritidis*
1982	39	571	6.8
1983	58	602	9.6
1984	50	617	8.1
1985	68	690	9.9
1986	56	728	7.7
1987	39	660	5.9
1988*	24	316	7.6

* Through August 1, 1988

250 million laying chickens would be astronomical. At the present time, a feasible solution would encompass three points:

1. Recognize the fact that raw eggs, like raw pork, beef and milk, are not a sterile product. They should be refrigerated below 45 degrees F. prior to cooking. Eggs should be thoroughly cooked to kill any pathogenic organisms present. Consumer education should stress these facts.

2. Eggs produced by known *S. enteritidis* infected flocks should be pasteurized prior to consumption.

3. Research should be conducted to develop specific and sensitive serologic tests for *S. enteritidis*. These screening tests should then be directed at the breeding flocks so that as laying flocks are replaced (every two years) replacement flocks are free of *S. enteritidis* infection.

Recommendations

The Missouri Department of Health recommends the following precautions regarding the handling of eggs and egg products:

1. Eggs should be stored at refrigerator temperatures (45° or below).

2. Eggs should be cracked immediately before cooking rather than precracked and pooled for later use. *S. enteritidis* has been cultured from an egg-breaking machine [3].

3. Mixing bowls and utensils that contact raw eggs should be washed and sanitized before contacting other foods. Also, hands should be thoroughly washed after handling raw eggs and before processing other food items.

4. Eggs should be cooked thoroughly. It is suggested that yolks should be solid and whites should be firm.

5. In institutional settings where those at high risk for complications of salmonellosis are fed, only pasteurized eggs should be used. Such settings include nursing homes, hospitals, and daycare facilities. This precaution is necessary because recent outbreaks in the Northeast have occurred even in the absence of food handling errors[2].

Consumer demand for retail sale of pasteurized eggs for use in the home must be met by marketing of such products in supermarkets. In the meantime, those who enjoy foods containing raw eggs must weigh the risks involved. For more information, call the Section of Disease Prevention, **314/751-6128**, or the Bureau of Veterinary Public Health, **314/ 751-6136**. ■

References

1. St. Louis ME et al. The emergence of grade A eggs as a major source of *Salmonella enteritidis* infections. *JAMA* 1988; 259:2103-2107.
2. CDC. Update: Salmonella enteritidis infections and grade A shell eggs—United States. MMWR 1988; 37:490-496.
3. CDC. Update: *Salmonella enteritidis* infections in the northeastern United States. *MMWR* 1987; 36:204-205.

Prevention of Perinatal Transmission of Hepatitis B Virus: Prenatal Screening of all Pregnant Women for Hepatitis B Surface Antigen

Effective July 1, 1988, the decision was made by the Department of Health to screen all pregnant women in public clinics for Hepatitis B at the first prenatal visit. This change in policy is in keeping with the recommendations recently published in the *MMWR*, June 10, 1988. Testing only high-risk women has not been shown to identify the entire population of Hepatitis BsAg positive women. After reviewing the cost benefit ratio for routine prenatal screening, the new policy was established.

The State Public Health Laboratory provides the screening test for surface antigen (HbsAg) for women enrolled in local health department prenatal clinics. When HBsAg positive women are identified, plans can be made for the delivery of HBIG within 12 hours of the birth of the baby and the first dose of HB vaccine. The remaining two doses of HB vaccine are made available to local health department clinics through the Prenatal Program at one and six months of life for the newborn. In addition, Missouri Medicaid covers HB vaccine and HBsAg testing. The following reprint is from the Morbidity and Mortality Weekly Report, June 10, 1988, Volume 37, Number 22 and are the Recommendations of the Immunization Practices Advisory Committee.

Transmission of hepatitis B virus (HBV) from mother to infant during the perinatal period represents one of the most efficient modes of HBV infection and often leads to severe long-term sequelae. Infants born to mothers positive for hepatitis B surface antigen (HBsAg) and hepatitis B "e" antigen (HBeAg) have a 70%-90% chance of acquiring perinatal HBV infection, and 85%-90% of infected infants will become chronic HBV carriers (1,2). It has been estimated that more than 25% of these carriers will die from primary hepatocellular carcinoma or cirrhosis of the liver (3). These deaths usually occur during adulthood, when familial and financial responsibilities make them particularly devastating. In the United States, an estimated 16,500 births occur to HBsAg-positive women each year (about 4,300 of whom are also HBeAg-positive), and approximately 3,500 of these infants become chronic HBV carriers. Prenatal screening of all pregnant women would identify those who are HBsAg-positive and thus would allow treatment of their newborns with hepatitis B immune globulin (HBIG) and hepatitis B (HB) vaccine, a regimen that is 85%-95% effective in preventing the development of the HBV chronic carrier state (2,4-6).

In 1984, the Immunization Practices Advisory Committee (ACIP) recommended that pregnant women in certain groups at high risk for HBV infection be screened for HBsAg during a prenatal visit and, if found to be HBsAg-positive, that their newborns receive HBIG and HB vaccine at birth (7). No data are available regarding the proportion of high-risk women currently being screened in clinical practice, but several studies and the experience of public health workers indicate that major problems have been encountered in implementing these recommendations (8-12). These include 1) concerns about the sensitivity, specificity, and practicality of the current ACIP guidelines for identifying HBV carrier mothers; 2) lack of knowledge among prenatal health-care providers about the risks of perinatal transmission of HBV and about recommended screening and treatment procedures; 3) poor coordination among medical-care workers who provide treatment and follow-up of mothers and infants; and 4) refusal of some public and private third-party payers to reimburse for HBV screening of pregnant women and treatment of their infants. In addition, concern has been expressed that these recommendations may not be practical or applicable in some U.S. jurisdictions where HBV infection is highly endemic, such as parts of Alaska and certain Pacific Islands.

The problems encountered in implementing the currently recommended strategy of screening high-risk women have been examined by a number of investigators. Recent studies in several large inner-city hospitals, where all pregnant women were tested for HBsAg, have found that only about 35%-65% of HBsAg-positive mothers would have been identified by following the current ACIP guidelines (8-12). In these studies, the prevalence of HBsAg in inner-city black (0.4%-1.5%) and Hispanic women was higher than expected. Several investigators expressed concern that many health-care providers are too busy or may be reluctant to obtain the sexual and drug-use history necessary to identify high-risk patients for screening. In addition, persons providing health care to pregnant women often are not aware of the risks of perinatal transmission of HBV and of the recommended screening and treatment guidelines. In one study, 40% of obstetricians could name no more than two groups at high risk for HBV infection, and only 28% knew the recommended treatment for infants born to HBV carrier mothers (CDC, unpublished data).

Given these limitations, it is now evident that routine screening of all pregnant women is the only strategy that will provide acceptable control of perinatal transmission of HBV infection in the United States. Screening the approximately 3.5 million pregnant women per year for HBsAg would identify 16,500 positive women and allow treatment that would prevent about 3,500 infants from becoming HBV carriers. Recent studies also indicate that the costs and benefits of universal testing of mothers are comparable to those encountered in other widely implemented programs of prenatal and blood-donor screening (13,14). The cost of an HBsAg test ranges from an estimated $3.50 per test in blood-bank laboratories to $21.00 per test in private commercial laboratories. If one assumes an average screening cost ranging from $12.00 to $20.00 per test plus $150.00 for the HBIG and vaccine needed to treat each infant of an HBsAg-positive mother, the cost to prevent one newborn infant from becoming a chronic-HBV carrier would be between $12,700 and $20,700.

HBsAg testing should be done early in pregnancy when other routine prenatal testing is done. The HBsAg test is widely available and can be added to the routine prenatal "panel" of tests without requiring additional patient visits. The advantages of making HBsAg testing routine during early pregnancy include 1) the ability to identify HBV carrier mothers that is not dependent on the health-care provider's identifying high-risk women or ordering HBsAg as a special test; 2) the availability of test results before delivery so that infants can receive HBIG and vaccine without delay after birth; and 3) appropriate counseling of families before delivery (15).

Because more than 90% of women found to be HBsAg-positive on routine screening will be HBV carriers, routine follow-up testing later in pregnancy is not necessary for the purpose of screening. In special situations, such as when the mother is thought to have acute hepatitis, when there has been a history of exposure to hepatitis, or when particularly high-risk behavior such as parenteral drug abuse has occurred during the pregnancy, an additional HBsAg test can be ordered during the third trimester. Few women in populations at low risk for HBV infection will have a change in HBsAg status during subsequent pregnancies. However, because of the expected benefits of making HBsAg testing a routine part of each prenatal panel, testing should be done during each pregnancy.

Women who present for delivery without prenatal care or without medical records documenting the results of HBsAg screening should have the HBsAg test done as soon as possible after admission, since delay in administration of HBIG to infants of carrier mothers will decrease the efficacy of therapy. In the studies that demonstrated the highest efficacy (85%-95%) of combined HBIG and HB vaccine prophylaxis, HBIG was administered within 2-12 hours after birth (2,4-6). In one study in which only HBIG was used for prophylaxis, no efficacy was found if HBIG was given more than 7 days after birth, and a significant decrease in efficacy was observed if it was given more than 48 hours after birth (16). Only one-third of U.S. hospitals currently perform the HBsAg test as an in-house procedure, and many of these have technicians who are trained to do the test available on only one shift. Hospitals that cannot rapidly test for HBsAg should either develop this capability or arrange for testing to be done at a local laboratory or blood bank where test results can be obtained within 24 hours.

The commercially available HBsAg tests have an extremely high sensitivity and specificity if positive tests are repeated and confirmed by neutralization as recommended by the manufacturers of the reagent kits. Testing for other markers of HBV infection, such as HBeAg, is not necessary for maternal screening. Mothers who are positive for both HBsAg and HBeAg have the highest likelihood of transmitting HBV to their newborns. However, infants of mothers who are HBsAg-positive but HBeAg-negative may become infected and develop severe, even fatal, fulminant hepatitis B during infancy (17,18). For this reason, HBIG and HB vaccine treatment of all babies born to HBsAg-positive women is recommended.

HBsAg-positive mothers identified during screening may have HBV-related acute or chronic liver disease and should be evaluated by a physician. Identification of women who are HBV carriers through prenatal screening presents an opportunity to vaccinate susceptible household members and sexual partners of HBV carriers, as previously recommended (19). Screening and vaccination of susceptible contacts should be done by the family's pediatrician, primary health-care provider, or the physician evaluating the clinical status of the HBsAg-positive pregnant women.

Implementation of the recommendations to prevent perinatal transmission requires maternal screening, treatment of the newborn in the hospital, and administration of subsequent doses of HB vaccine to the infant during pediatric visits at 1 and 6 months of age. This multistep process requires effective transfer of information among several groups of heath-care providers, knowledge of recommended treatment, and availability of HBIG and vaccine at separate facilities. Treatment failures due to lack of communication among health-care providers can occur, especially in situations where prenatal, obstetric, and pediatric care are provided in different facilities (20). Central coordination of the treatment of these infants by city, county, or state health

departments would improve the education of the health-care providers involved and increase the likelihood that proper treatment is provided.

In certain populations under U.S. jurisdiction, including Alaskan Natives and Pacific Islanders, as well as in many other parts of the world, HBV infection is highly endemic in the general population, and transmission occurs primarily during childhood (21). In such groups, universal vaccination of newborns with HB vaccine is recommended to prevent disease transmission both during the perinatal period and during childhood. Several studies have shown that HB vaccine given without HBIG will prevent 70%-85% of perinatal HBV infections and 95% of early childhood infections (22,23). In many of these areas with highly endemic HBV infection, prenatal screening is impractical because the population is isolated, laboratory facilities are not available, and/or health-care budgets and personnel are limited. In these areas, control of HBV infection can be better achieved by directing available resources into programs to vaccinate all children with HB vaccine. Programs for screening all mothers for HBsAg and providing HBIG to infants born to carrier mothers are costly and will add only modestly to disease prevention. They should be considered only after the program for universal vaccination of children has been implemented.

RECOMMENDATIONS

All pregnant women should be routinely tested for HBsAg during an early prenatal visit in each pregnancy. This testing should be done at the same time that other routine prenatal screening tests are ordered. In special situations, such as when acute hepatitis is suspected, when there has been a history of exposure to hepatitis, or when the mother has a particularly high-risk behavior such as intravenous drug abuse, an additional HBsAg test can be ordered later in the pregnancy.

If a woman has not been screened prenatally or if test results are not available at the time of admission for delivery, HBsAg testing should be done at the time of admission, or as soon as possible thereafter. If the mother is identified as HBsAg-positive more than 1 month after giving birth, the infant should first be tested for HBsAg; if negative, the infant should be treated with HBIG and HB vaccine. Hospitals where infants are delivered should have HBsAg testing capabilities or should be able to obtain HBsAg results within 24 hours from a local laboratory.

If a serum specimen is positive for HBsAg, the same specimen should be tested again, and then the test results should be confirmed by neutralization. It is unnecessary to test for other HBV markers during maternal screening, although HBsAg-positive mothers identified during screening may have HBV-related acute or chronic liver disease and should be evaluated by their physician.

Infants born to HBsAg-positive mothers should receive HBIG (0.5 mL) intramuscularly (IM) once they are physiologically stable, preferably within 12 hours after birth. HB vaccine, either plasma-derived (10 micrograms per dose) or recombinant (5 micrograms per dose), should be administered IM in three doses of 0.5 mL each. The first dose should be given concurrently with HBIG but at a different site. If vaccine is not immediately available, the first dose can be given within 7 days after birth. The second and third doses should be given 1 month and 6 months after the first. Testing the infant for HBsAg and its antibody (anti-HBs) is recommended at 12-15 months of age to monitor the effectiveness of therapy. If HBsAg is not detectable and anti-HBs is present, the child can be considered protected. Testing for antibody to hepatitis B core antigen (anti-HBc) is not useful, since maternal anti-HBc can persist for more than a year. HBIG and HB vaccination do not interfere with the routine childhood immunizations.

Household members and sexual partners of HBV carriers identified through prenatal screening should be tested to determine susceptibility to HBV infection and, if susceptible, should receive HB vaccine. Screening and vaccination of susceptible contacts should be done by the family's pediatrician, primary health-care provider, or the physician evaluating the clinical status of the HBsAg-positive pregnant women.

Obstetric and pediatric staff should be notified directly about HBsAg-positive mothers so that the neonate can receive therapy without delay after birth and follow-up doses of vaccine can be given. Hospitals, as well as state, county, and city health departments, should establish programs to educate appropriate health-care providers about perinatal transmission of HBV and its control through maternal screening, treatment of infants, and vaccination of susceptible household and sexual contacts of HBV carrier women.

Programs to coordinate the activities of those providing prenatal care, hospital-based obstetrical services, and pediatric well-baby care must be established to assure proper follow-up and treatment of infants born to HBsAg-positive mothers and other susceptible household and sexual contacts.

In populations under U.S. jurisdiction in which hepatitis B infection is highly endemic, including certain Alaskan Native and Pacific Island groups, vaccination of all newborns with HB vaccine is the most effective strategy for HB control. In these populations, such vaccination programs should be given highest priority. In areas

where HBsAg screening of mothers and use of HBIG in infants born to HBV carrier mothers are not practical, the vaccination of all newborns with HB vaccine should be considered the appropriate treatment.

Editorial Note: Hepatitis B vaccine is the first human vaccine that can prevent both serious chronic disease and a uniformly fatal type of cancer. These recommendations, developed in consultation with representatives of the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics, represent a major step toward control of perinatal hepatitis B transmission in the United States. Programs for universal screening of pregnant women are currently in progress in Hawaii, certain Canadian provinces, Italy, West Germany, New Zealand, Australia, and Japan. More extensive infant HB vaccination programs are in progress in Alaska, American Samoa, Korea, Taiwan, Singapore, and the People's Republic of China. A number of U.S. health-care facilities have already begun to screen all pregnant women for HBsAg.

State and local health departments can facilitate implementation of these recommendations by 1) working to assure that all women receiving prenatal care in both public and private sector programs are offered screening and appropriate treatment; 2) working to assure that costs of screening and treatment are covered by public and private third-party payers; 3) establishing programs to coordinate the transfer of information between prenatal, obstetric, and pediatric health-care providers; and 4) providing health education about hepatitis B to the public and to health-care providers. CDC will continue to work with state and local health agencies and professional associations in hepatitis B prevention and control. ■

References

1. Stevens CE, Beasley RP, Tsui J, Lee W-C. Vertical transmission of hepatitis B antigen in Taiwan. *N Engl J Med* 1975;292:771-4
2. Stevens CE, Toy PT, Tong MJ, et al. Perinatal hepatitis B virus transmission in the United States: prevention by passive-active immunization. *JAMA* 1985;253:1740-5.
3. Beasley RP, Hwang L-Y. Epidemiology of hepatocellular carcinoma. In: Vyas GN, Dienstag JL, Hoofnagle JH, eds. Viral hepatitis and liver disease. Orlando, Florida: Grune & Stratton, 1984:209-24.
4. Beasley RP, Hwang, L-Y, Lee GC-Y, et al. Prevention of perinatally transmitted hepatitis B virus infections with hepatitis B immune globulin and hepatitis B vaccine. *Lancet* 1983;2:1099-102.
5. Wong VCW, Ip HMH, Reesink HW, et al. Prevention of HBsAg carrier state in newborn infants of mothers who are chronic carriers of HBsAg and HBeAg by administration of hepatitis-B vaccine and hepatitis-B immunoglobulin: double-blind randomised placebo-controlled study. *Lancet* 1984;1:921-6.
6. Stevens CE, Taylor PE, Tong MJ, et al. Yeast-recombinant hepatitis B vaccine: efficacy with hepatitis B immune globulin in prevention of perinatal hepatitis B virus transmission. *JAMA* 1987;257:2612-6.
7. Immunization Practices Advisory Committee. Postexposure prophylaxis of hepatitis B. *MMWR* 1984;33:285-90.
8. Kumar ML, Dawson NV, McCullough AJ, et al. Should all pregnant women be screened for hepatitis B? *Ann Intern Med* 1987;107:273-7.
9. Jonas MM, Schiff ER, O'Sullivan MJ, et al. Failure of Centers for Disease Control criteria to identify hepatitis B infection in a large municipal obstetrical population. *Ann Intern Med* 1987;107:335-7.
10. Summers PR, Biswas MK, Pastorek JG II, Pernoll ML, Smith LG, Bean BE. The pregnant hepatitis B carrier: evidence favoring comprehensive antepartum screening. *Obstet Gynecol* 1987;69:701-4.
11. Wetzel AM, Kirz DS. Routine hepatitis screening in adolescent pregnancies: is it cost effective? *Am J Obstet Gynecol* 1987;156:166-9.
12. Delage G, Montplaisir S, Remy-Prince S, Pierri E. Hepatitis B Virus Immunization Study Group. Prevalence of hepatitis B virus infection in pregnant women in the Montreal area. *Can Med Assoc J* 1986;134:897-901.
13. Arevalo JA, Washington AE. Cost-effectiveness of prenatal screening and immunization for hepatitis B virus. *JAMA* 1988;259:365-9.
14. Kane MA, Hadler SC, Margolis HS, Maynard JE. Routine prenatal screening for hepatitis B surface antigen. *JAMA* 1988;259:408-9.
15. Hershow RC, Hadler SC, Kane MA. Adoption of children from countries with endemic hepatitis B: transmission risks and medical issues. *Pediatr Infect Dis* 1987;6:431-7.
16. Beasley RP, Stevens CE. Vertical transmission of HBV and interruption with globulin. In:Vyas GN, Cohen SN, Schmid R, eds. Viral hepatitis: a contemporary assessment of etiology, epidemiology, pathogenesis and prevention. Philadelphia: Franklin Institute Press, 1978:333-45.
17. Sinatra FR, Shah P, Weissman JY. Thomas DW, Merritt RJ, Tong MJ. Perinatal transmitted acute icteric hepatitis B in infants born to hepatitis B surface antigen-positive and anti-hepatitis Be-positive carrier mothers. *Pediatrics* 1982;70:557-9.
18. Delaplane D, Yogev R, Crussi F, Shulman ST. Fatal hepatitis B in early infancy: the importance of identifying HBsAg-positive pregnant women and providing immunoprophylaxis to their newborns. *Pediatrics* 1983;72:176-80.
19. Immunization Practices Advisory Committee. Recommendations for protection against viral hepatitis. *MMWR* 1985;34:313-24,329-35.
20. Klontz KC. A program to provide hepatitis B immunoprophylaxis to infants born to HBsAg-positive Asian and Pacific Island women. *West J Med* 1987;146:195-9.
21. McMahon BJ, Rhoades ER, Heyward WL, et al. A comprehensive programme to reduce the incidence of hepatitis B virus infection and its sequelae in Alaskan Natives. *Lancet* 1987;2:1134-6.
22. Xu Z-Y, Liu C-B, Francis DP, et al. Prevention of prenatal acquisition of hepatitis B virus carriage using vaccine: preliminary report of a randomized, double-blind placebo-controlled and comprehensive trial. *Pediatrics* 1985;76:713-8.
23. Coursaget P, Yvonnet B, Chotard J, et al. Seven-year study of hepatitis B vaccine efficacy in infants from an endemic area (Senegal). *Lancet* 1986;2:1143-5.

Haemophilus Influenza Type B and *Haumophilus B* Conjugate Vaccine

Steve Weems, Bureau of Immunization

Haemophilus influenzae type b (Hib) is a leading cause of systemic bacterial disease in the United States. It is the most common cause of bacterial meningitis, accounting for an estimated 12,000 cases annually, primarily among children under five years of age.

Approximately 30-38 percent of *Haemophilus b* disease occurs among children 18 months of age or older, and 15-25 percent occurs among children above 24 months of age. Recent studies also have suggested that the risk of acquiring primary *Haemophilus b* disease for children under five years of age appears to be greater for those who attend day care facilities than for those who do not.

In 1987, there were 131 cases of reported *Haemophilus b* disease in Missouri; 106 of these cases occurred in children under four years of age. A total of three deaths were reported. From January 1 through October 1, 1988, there were 87 cases of Hib reported statewide; 79 cases occurred in children under four years of age.

In December 1987, the Food and Drug Administration licensed the first conjugate vaccine for the prevention of Hib infections. This vaccine is a conjugate of Hib capsular polysaccharide and diphtheria toxoid. Conjugate vaccine was developed with the ultimate goal of providing an effective vaccine for infants and younger children, since without the vaccine one of every 200 children in the United States would be expected to have a systemic infection due to Hib by five years of age.

In clinical testing of the conjugate vaccine in more than 30,000 children, no serious adverse reactions were observed. The immunogenicity of the conjugate vaccine is significantly greater than that observed with the polysaccharide form.

The Immunization Practices Advisory Committee (ACIP) of the Centers for Disease Control provided the following recommendations published in the *Morbidity and Mortality Weekly Report*, January 22, 1988.

1. The ACIP recommends that all children receive conjugate vaccine at 18 months of age. The efficacy of conjugate vaccine in children 18 months of age or older has not been determined in field trials. However, studies comparing antibody production in children receiving conjugate vaccine with that in children receiving polysaccharide vaccine suggest that conjugate vaccine is likely to be more effective than polysaccharide vaccine. The ACIP therefore recommends use of conjugate vaccine in all children vaccinated against *Haemophilus b* disease.

2. While the duration of immunity after a single dose of conjugate vaccine is unknown at this time, it is expected to be at least 1.5 to 3 years. Until further information is available, revaccination is not recommended for children receiving conjugate vaccine at 18 months of age or older.

3. Vaccination of children more than 24 months of age who have not yet received *Haemophilus b* vaccine should be based on risk of disease. Children considered at high risk for *Haemophilus b* disease, including those attending day care centers, those with anatomic or functional asplenia (i.e., sickle cell disease or spenectomy), and those with malignancies associated with immunosuppression, should receive the vaccine. Although risk of disease decreases with increasing age, physicians may wish to vaccinate previously healthy children between 2 and 5 years of age to prevent disease that can occur in this group.

4. Because many children who received polysaccharide vaccine between the ages of 18 and 23 months may have had a less than adequate response to the vaccine, they should be revaccinated with a single dose of conjugate vaccine. Revaccination should take place a minimum of 2 months after the initial dose of polysaccharide vaccine.

5. There is no need to routinely revaccinate children who received polysaccharide vaccine at 24 months of age or older.

6. Children who had invasive *Haemophilus b* disease when they were less than 24 months of age should still receive vaccine according to the above recommendations since most children less than 24 months of age fail to develop adequate immunity following natural infection.

7. Although increases in serum diphtheria anti-toxin levels can follow administration of conjugate vaccine, this vaccine should not be considered an immunizing agent against diphtheria. No changes in the schedule for administration of diphtheria toxoid, customarily given as DTP, should be made secondary to the use of conjugate vaccine.

Hib Vaccine Cont'd

8. Vaccination with either polysaccharide vaccine or conjugate vaccine probably does not inhibit asymptomatic carriage of *Haemophilus b* organisms. Although vaccinated children may be protected from invasive disease, they may pass the organism on to susceptible children. In addition, no vaccine is 100% effective. Therefore, chemoprophylaxis of household or day care contacts of children with *Haemophilus b* disease should be directed at vaccinated as well as unvaccinated contacts. Because of the length of time necessary to generate an immunologic response to the vaccines, vaccination does not play a major role in the management of patients with *Haemophilus b* disease or their contacts. Vaccine may be given to previously unvaccinated children of appropriate age to provide protection against future exposure.
9. Conjugate vaccine and DTP may be given simultaneously at different sites. Data are lacking on concomitant administration of conjugate vaccine and measles-mumps-rubella (MMR) or oral polio (OPV) vaccines. However, if the recipient is unlikely to return for further vaccination, simultaneous administration of all vaccines appropriate to the recipient's age and previous vaccination status is recommended (including DTP, OPV, MMR and conjugate vaccine).

The Missouri Department of Health, Bureau of Immunization purchased conjugate vaccine for public use in August 1988 and over 12,000 doses have been distributed in the state. For more information on the availability of Hib conjugate vaccine, contact your local health department or the Bureau of Immunization, P.O. Box 570, Jefferson City, Missouri 65102. ■

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COMPENDIUM OF ANIMAL RABIES CONTROL, 1989
— Part III: Rabies Control

A. PRINCIPLES OF RABIES CONTROL

1. **HUMAN RABIES PREVENTION:** Rabies in humans can be prevented either by eliminating exposures to rabid animals or, in exposed persons by prompt local wound treatment combined with appropriate passive and active immunization. The rationale for recommending pre exposure and post exposure rabies prophylaxis and details of their administration can be found in the current recommendations of the Immunization Practices Advisory Committee (ACIP), of the U.S. Public Health Services. These recommendations, along with information concerning the current local and regional status of animal rabies and the availability of human rabies biologics, are available from state health departments.

2. **DOMESTIC ANIMALS:** Local governments should initiate and maintain effective programs to remove strays and unwanted animals and ensure vaccination of all dogs and cats. Since cat rabies cases frequently exceed the annually reported cases in dogs, immunization of cats should be required. Such procedures in the U.S. have reduced laboratory confirmed rabies cases in dogs from 6,949 in 1947 to 170 in 1987. The recommended vaccination procedures and the licensed animal vaccines are specified in Parts I and II of the National Association of State Public Health Veterinarians (NASPHV) annually released compendium.

3. **RABIES IN WILDLIFE:** The control of rabies in foxes, skunks, raccoons, and other terrestrial animals is very difficult. Selective reduction of these populations when indicated may be useful, but the utility of this procedure depends heavily upon the circumstances surrounding each rabies outbreak. (See C. Control Methods in Wild Animals.)

B. CONTROL METHODS IN DOMESTIC AND CONFINED ANIMALS

1. **PRE-EXPOSURE VACCINATION AND MANAGEMENT:** Animal rabies vaccines should be administered only by or under the direct supervision of a veterinarian. This is the only way to assure the public that the animal has been properly immunized. Within one month after vaccination, a peak rabies antibody titer is reached and the animal can be considered to be immunized. (See Parts I and II of the compendium for recommended vaccines and procedures.)

   (a) DOGS AND CATS— All dogs and cats should be vaccinated against rabies commencing at three months of age and revaccinated in accordance with Part II of this Compendium.

   (b) LIVESTOCK— It is not economically feasible, nor is it justified from a public health standpoint, to vaccinate all livestock against rabies. Owners and veterinary clinicians may consider immunizing certain livestock, especially those which are valuable and/or may have high contact with humans, located in areas where wildlife rabies is epizootic.

   (c) OTHER ANIMALS

   (1) ANIMALS MAINTAINED IN EXHIBITS AND IN ZOOLOGICAL PARKS— Captive animals not completely excluded from all contact with local vectors of rabies can become infected with rabies. Moreover, such animals, may be incubating rabies when captured. Exhibit animals susceptible to rabies should be quarantined for a minimum of 180 days. Since there is no rabies vaccine licensed for use in wild animals, vaccination even with inactivated vaccine is not recommended. Pre-exposure rabies immunization of animal workers at such facilities is recommended. This may reduce the need for euthanasia of valuable animals for rabies testing after they have bitten a handler.

   (2) WILD ANIMALS— Because of the existing risk of rabies in wild animals (especially raccoons, skunks, and foxes), the American Veterinary Medical Association (AVMA), the NASPHV and the Council of State and Territorial Epidemiologists (CSTE) strongly recommend the enactment of state laws prohibiting the importation, distribution and relocation of wild animals and wild animals crossbred to domestic dogs and cats. These same organizations continue to recommend the enactment of laws prohibiting the distribution or keeping of wild animals as pets. Moreover, the NASPHV and CSTE recommend that ferrets not be kept as pets, since they have severely bitten many people, especially inflicting mutilating bites to infants. Ferrets are susceptible to and could transmit rabies. Because the period of rabies virus shedding in infected ferrets is unknown, confinement and observation of ferrets that bite people are not appropriate.

2. **STRAY ANIMAL CONTROL** - Stray dogs or cats should be removed from the community, especially in rabies epizootic areas. Local health department and animal control officials can enforce the pick up of strays more efficiently if owned animals are confined or kept on leash. Strays should be impounded for at least three days to give owners sufficient time to reclaim animals apprehended as strays or determine if human exposure occurred.

3. **QUARANTINE** - (a) INTERNATIONAL. Present USPHS regulations (42 CFR No. 71.51) governing the importation of dogs and cats are minimal for preventing the introduction of rabid animals into the United States. All dogs and cats imported from countries with endemic rabies should be vaccinated against rabies at least 30 days prior to entry into the United States. The Centers for Disease Control (CDC) are responsible for these animals imported into the United States. Their requirements should be coordinated with interstate shipment requirements. The health authority of the state of destination should be notified within 72 hours of any animal conditionally admitted into its jurisdiction.

The conditional admission into the United States of such animals must be subject to state and local laws governing rabies. Failure to comply with these requirements should be promptly reported to the director of the CDC.

(b) INTERSTATE. Prior to interstate movement, dogs and cats should be vaccinated against rabies according to the compendium's recommendations at least 30 days prior to movement. While in transit, they should be accompanied by a currently valid NASPHV Form #50 Rabies Vaccination Certificate. One copy of the certificate should be mailed to the appropriate Public Health Veterinarian or State Veterinarian of the state of destination.

(c) HEALTH CERTIFICATES. If a certificate is required for dogs and cats in transit, it must not replace the NASPHV rabies vaccination certificate.

4. **ADJUNCT PROCEDURES** - Methods or procedures which enhance rabies control include: (a) LICENSURE. Registration or licensure of all dogs and cats may be used as a means of rabies control by controlling the stray animal population. Frequently a fee is charged for such licensure and revenues collected are used to maintain rabies or animal control programs. Vaccination is an essential prerequisite to licensure.

(b) CANVASSING OF AREA. This includes house-to-house calls by members of the animal control program to enforce vaccination and licensure requirements.

(c) CITATIONS. These are legal summonses issued to owners for violations including the failure to vaccinate or license their animals. The authority for officers to issue citations should be an integral part of each animal control program.

(d) LEASH LAWS. All communities should adopt leash laws which can be incorporated in their animal control ordinances.

5. **POST-EXPOSURE MANAGEMENT** - ANY DOMESTIC ANIMAL THAT IS BITTEN OR SCRATCHED BY A BAT OR A WILD, CARNIVOROUS MAMMAL WHICH IS NOT AVAILABLE FOR TESTING SHOULD BE REGARDED AS HAVING BEEN EXPOSED TO A RABID ANIMAL.

(a) DOGS AND CATS. When bitten by a rabid animal, unvaccinated dogs and cats should be destroyed immediately. If the owner is unwilling to have this done, the animal should be placed in strict isolation for six months and vaccinated one month before being released. Dogs and cats that are currently vaccinated should be revaccinated immediately and observed by the owner for 90 days.

(b) LIVESTOCK. All species of livestock are susceptible to rabies; cattle are among the most susceptible of all domestic animals. Livestock bitten by rabid animals should be destroyed (slaughtered) immediately. If the owner is unwilling to have this done, the animal should be kept under very close observation for six months.

The following are recommendations for owners of livestock exposed to rabid animals:

(1) If slaughtered within seven days of being bitten, tissues may be eaten without risk of infection providing liberal portions of the exposed area are discarded. Federal meat inspectors will reject for slaughter any animal known to have been exposed to rabies within eight months.

(2) Neither tissues nor milk from a rabid animal should be used for human or animal consumption. However, as pasteurization temperatures will inactivate rabies virus, the drinking of pasteurized milk or eating of completely cooked meat does not constitute a rabies exposure.

6. **MANAGEMENT OF ANIMALS THAT BITE HUMANS** - A healthy dog or cat that bites a person should be confined and observed for 10 days and evaluated by a veterinarian at the first sign of illness during confinement or before release. Any illness in the animal should be reported immediately to the local health department. If signs suggestive of rabies develop, the animal should be humanely killed and its head removed and shipped, under refrigeration, for examination by a qualified laboratory designated by the local or state health department. Any stray or unwanted dog or cat that bites a person may be killed immediately and the head submitted, as described above, for rabies examination.

C. **CONTROL METHODS IN WILD ANIMALS** - The public should be warned not to handle wild animals. Bats and wild carnivorous mammals, as well as wild animals cross-bred with domestic dogs and cats, that bite people should be killed and appropriate tissues should be sent to the laboratory for examination for rabies. A person bitten by any wild animal should immediately report the incident to a physician who can evaluate the need for antirabies treatment. (see current Rabies Prophylaxis Recommendations of the Immunization Practices Advisory Committee: Rabies.)

1. **TERRESTRIAL MAMMALS** - Continuous and persistent government-funded programs for trapping or poisoning wildlife as a means of rabies control are not cost effective in reducing wildlife reservoirs or rabies incidence on a statewide basis. However, limited control in high-contact areas (picnic grounds, camps, suburban areas) may be indicated for the removal of selected high-risk species of wild animals. The state wildlife agency should be consulted early to manage any elimination programs in coordination with the state health department.

2. **BATS** - (a) Rabid bats have been reported from every state except Hawaii, and have caused human rabies in the United States. It is neither feasible nor desirable, however, to control rabies in bats by areawide bat population reduction programs.

(b) Bats should be excluded from houses and surrounding structures to prevent direct association with people. Such structures should then be made bat proof by sealing entrances.

If you have questions regarding this rabies compendium, please call the Bureau of Veterinary Public Health, **314/ 751-6136.** ■

We Asked for It — We Got It
Survey Results, November 1988

Thanks for your response to the recent survey regarding topics for future issues. Many suggestions were given which will make planning future issues easier in order to satisfy the readership. Suggestions ranged from a variety of infectious diseases (reporting/surveillance) as well as requests for items on infection control and communicable disease policies. Many of you requested additional AIDS topics. It is anticipated that we will continue to publish "SPECIAL AIDS ISSUES" which will address current information on AIDS/HIV as we have done in the past. Other suggested topics were environmental quality, occupational health, zoonotic diseases and hazardous/infectious waste. Many of you requested articles relating to geriatric issues and other long-term care public health problems. These suggestions will be considered for future issues.

Information was requested regarding reportable diseases and conditions as well as how to obtain proper reporting forms. Please watch for our next issue which will be devoted to the reporting of diseases and conditions to the local and state health department. The article will also address how to obtain assistance from the State Public Health Laboratory for specimen confirmation and completion of investigation forms. It is through your local surveillance programs and your efforts to report diseases that we can more accurately reflect the incidence of disease in your locale. These numbers are reflected in the "Bi-monthly Report of Communicable Diseases" which is inserted into the newsletter.

The majority of responses indicated that bi-monthly production is workable. By keeping this frequency of publication, timely information can be provided to your offices without delay. The overwhelming response we received is an indication that the newsletter is of value and provides timely data to our readership. Again, thanks for your suggestions; contributions are welcome any time. *.....Sue Heisler, Managing Editor*

Who do You Think of When You Think of a Sanitarian?

Erwin Gadd, Chief, Bureau of Community Sanitation

What does a Sanitarian do?

Sanitarians are found many places— evaluating the water supply; checking the temperature of a food; determining the safety of a school playground; making recommendations to city officials for correcting an environmental problem; and making a professional judgement on "what if."

Nurses help them, dogs bark at them, salesmen detain them, alarm clocks befriend them, meals wait for them, weather can delay them, but nothing can stop them.

A sanitarian is a paradox. They may wear bluejeans as public health professionals perhaps with their offices in the basement of the county courthouse. They are scientists who use chemicals and pesticides in a balance only safe for the environment; purchasing agents for the county when requested; personnel directors with sweat on their brows; problem solvers when inadequate monies are an issue; and managers battling a budget squeeze. They impact more capital than most people in town.

What do sanitarians like?

Nobody else gets so much satisfaction out of seeing a new restaurant go up; a happy recipient of the sanitarian's services; providing information to friends and citizens; and directing a visitor to a requested location. No one else has in their pocket at one time a thermometer, flashlight, light meter, measuring tape, test strips for determining chemical strengths, a memo book and guides for compliance with applicable sanitation standards.

Sanitarians like people; food bars; co-workers; their freedom to make constructive recommendations; a supportive county health board; and above all, a paycheck which will meet necessary expenses.

The sanitarian is not much for diseases; a dirty environment; a business car that won't run; bad dogs; or an empty billfold.

Sanitarians must have faith in their fellowman. They must keep commitments amid the many avenues for diversion of their attention. You can reduce a sanitarian's salary but you cannot diminish his optimism.

Might as well put up with the sanitarian. The sanitarian is your friend, your servant, your customer, your contact for continued good health and well-being. This person is your countryman– a grained, hardworking individual having as his or her first interest the protection of your most important asset– your health . When this sanitarian goes home at night having spent the energy of hopes and dreams, this sanitarian can be recharged with the magic words Mr. Smith called and said, **"thanks for your help."** ■

MISSOURI DEPARTMENT OF HEALTH
DISEASE PREVENTION — COMMUNICABLE DISEASE CONTROL

BIMONTHLY MORBIDITY REPORT

Reporting Period *: September & October, 1988

	DISTRICTS							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	SPGFD	2 MONTH STATE TOTALS		CUMULATIVE FOR	CUMULATIVE FOR	5 YR MEDIAN
	** NW	NE	CD	SE	** SW	** ED	*** OTHER					1988	1987	1988	1987	
Vaccine Preventable Dis.																
Chickenpox	0	5	22	3	0	5	0	0	0	0	0	35	24	7061	6876	
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Influenza	0	0	0	0	0	0	0	0	0	0	0	0	0	142	60	
Measles	0	0	0	0	0	0	0	0	0	0	0	0	0	2	190	
Mumps	1	0	1	2	0	0	0	0	0	0	0	4	5	34	27	
Pertussis	2	0	1	0	0	0	0	4	0	0	0	7	8	22	32	
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Rubella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Viral Hepatitis																
A	72	5	8	3	9	0	0	60	0	5	3	165	94	702	263	
B	8	11	12	6	4	3	0	21	10	3	5	83	84	498	369	
Non A - Non B	2	0	1	0	2	0	0	0	1	3	0	9	8	43	36	
Unspecified	0	0	1	0	0	2	0	1	0	0	0	4	4	14	19	
Meningitis																
Aseptic	5	0	0	2	1	4	0	5	1	8	0	26	43	91	126	
H. influenza	0	0	0	0	5	1	0	1	2	2	1	12	11	93	89	
Meningococcal	0	0	0	2	0	1	0	1	0	1	0	5	0	29	25	
Other	2	0	0	1	2	6	0	0	0	0	0	11	7	49	55	
Enteric Infections																
Campylobacter	6	0	5	6	9	14	0	9	4	21	13	87	44	366	208	
Salmonella	14	3	26	14	8	19	0	15	23	40	12	174	156	636	564	
Shigella	4	0	64	2	4	6	0	11	23	7	18	139	140	510	350	
Typhoid Fever	0	0	1	0	0	0	0	0	0	0	0	1	2	2	5	
Parasitic Infections																
Amebiasis	0	0	0	1	1	0	0	0	1	2	0	5	10	25	18	
Giardiasis	35	5	37	9	8	12	0	16	12	22	2	158	180	510	559	
Toxoplasmosis	1	0	0	3	0	0	0	0	0	0	0	4	12	16	88	
Sexually Transmitted Dis.																
AIDS	13	1	0	0	6	3	0	45	9	5	1	83	49	346	164	
Gonorrhea	121	24	85	142	31	29	0	1432	1094	369	33	3360	3107	13954	14054	
Genital Herpes	26	5	34	11	20	8	0	83	82	39	11	319	279	1826	1195	
Nongonoc. urethritis	35	15	64	41	5	18	0	264	633	273	12	1360	1367	6333	6746	
Prim. & sec. syphilis	0	0	0	15	0	0	0	21	3	0	0	39	9	122	83	
Tuberculosis																
Extrapulmonary	0	0	3	0	1	0	0	0	0	0	0	4	4	32	44	
Pulmonary	1	1	3	5	6	0	3	7	2	2	1	31	39	185	227	
Zoonotic																
Animal Bites	122	30	19	37	39	723	0	2	0	0	1	973	211	3820	2198	
Psittacosis	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Rabies (Animal)	0	0	0	3	0	1	0	0	0	0	0	4	11	33	53	
Rocky Mtn. Sp. Fever	4	0	1	0	0	7	0	2	0	0	1	15	2	50	18	
Tularemia	1	1	3	2	0	0	0	0	0	0	0	7	10	41	39	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis -1
Chancroid
Cholera
Cryptosporidiosis
Encephalitis (infectious) -1
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease
Legionnellosis -4
Leptospirosis
Lymphogranuloma Venereum
Malaria -1
Plague
Rabies (human)
Reye's Syndrome
Toxic-Shock Syndrome -3
Trichinosis

Outbreaks

Foodborne/waterborne -2
Histoplasmosis
Nosocomial -2
Pediculosis
Scabies -2
Other -3

* *Reporting Period Beginning* SEPT 04, *Ending* OCT 29.
** *Totals do not include KC, SLC, SLCo, or Springfield*
*** *State and Federal Institutions*

Due to data editing, totals may change.

MO 580-0490 (7-88)

Missouri EPIDEMIOLOGIST

SPECIAL AIDS ISSUE *JANUARY 1988*

Revision of the CDC Surveillance Case Definition for Acquired Immunodeficiency Syndrome

Excerpt from Vol.36, No. 1S, MORBIDITY AND MORTALITY WEEKLY REPORT, August 14, 1987

A revised case definition for surveillance of acquired immunodeficiency syndrome (AIDS) was developed by CDC in collaboration with public health and clinical specialists. The Council of State and Territorial Epidemiologists (CSTE) has officially recommended adoption of the revised definition for national reporting of AIDS. There are four objectives of the revision: First, to track more effectively the severe disabling morbidity associated with infection with human immunodeficiency virus (HIV) (including HIV-1 and HIV-2); Second, to simplify reporting of AIDS cases; Third, to increase the sensitivity and specificity of the definition through greater diagnostic application of laboratory evidence for HIV infection; and, Fourth, to be consistent with current diagnostic practice, which in some cases includes presumptive, i.e., without confirmatory laboratory evidence, diagnosis of AIDS-indicative diseases (e.g., *Pneumocystis carinii* pneumonia, Kaposi's sarcoma).

After HIV was discovered to be the cause of AIDS and highly sensitive and specific HIV-antibody tests became available, the spectrum of manifestations of HIV infection became better defined, and classification systems for HIV infection were developed. It became apparent that some progressive, seriously disabling, and often fatal conditions (e.g., encephalopathy, wasting syndrome), which affected a substantial number of HIV-infected patients, were not subject to epidemiologic surveillance because they were not included in the AIDS case definition. For reporting purposes, the revision adds to the definition most of those severe, non-infectious, non-cancerous, HIV-associated conditions that are categorized in the CDC clinical classification systems for HIV infection among adults and children (4,5). The effectiveness of the revision will depend on how extensively HIV-antibody tests are used.

The definition is organized into three sections that depend on the status of laboratory evidence of HIV infection (e.g., HIV antibody). The major proposed changes apply to patients with laboratory evidence for HIV infection: a) inclusion of HIV encephalopathy, HIV wasting syndrome, and a broader range of specific AIDS-indicative diseases; b) inclusion of AIDS patients whose indicator diseases are diagnosed presumptively; and c) elimination of exclusions due to other causes of immunodeficiency.

Application of the definition for children differs from that for adults in two ways. First, multiple or recurrent serious bacterial infections and lymphoid interstitial pneumonia/pulmonary lymphoid hyperplasia are accepted as indicative of AIDS among children but not among adults. Second, for children less than 15 months old whose mothers are thought to have had HIV infection during the child's perinatal period, the laboratory criteria for HIV infection are more stringent, since the presence of HIV antibody in the child is, by itself, insufficient evidence for HIV infection because of the persistence of passively acquired maternal antibodies less than 15 months after birth.

The diagnostic criteria accepted by the AIDS surveillance case definition should not be interpreted as the standard of good medical practice. Presumptive diagnoses are accepted in the definition because not to count them would be to ignore substantial morbidity resulting from HIV infection. Likewise, the definition accepts a reactive screening test for HIV antibody without confirmation by a supplemental test because a repeatedly reactive screening test result, in combination with an indicator disease is highly indicative of true HIV disease. For national surveillance purposes, the tiny proportion of possibly false-positive screening tests in persons with AIDS-indicative diseases is of little consequence. For the individual patient, however, a correct diagnosis is critically important. The use of supplemental tests is, therefore, strongly endorsed. An increase in the diagnostic use of HIV-antibody tests could improve both the quality of medical care and the function of the new case definition, as well as assist in providing counseling to prevent transmission of HIV. ■

Editor's Note: Missouri began using the new case definition October 3, 1987. As a result, 52 of the 139 cases reported since that date were included as a result of the new definition.

Policy Statement: Reporting HIV Seropositives

√ It shall be the policy of the Missouri Department of Health (MDOH) that all laboratory tests confirmed reactive for human immunodeficiency virus (HIV) by culture or antigen detection or repeatedly reactive for antibodies to HIV shall be reportable to the MDOH, Bureau of AIDS Prevention. Currently, the best available method for determining seropositivity to HIV is repeatedly reactive enzyme-linked immunosorbent assays (ELISA) supported by a supplemental test, either the Western Blot (W.B.) test or the Indirect Flourescent Antibody (IFA). The combination of reactive ELISAs and a nonreactive W.B. represents a false reactive and shall not be reported. However, if a supplemental test is not done, the laboratory should report repeatedly reactive ELISA results so that the MDOH may arrange for retesting and counseling.

√ The State Public Health Laboratory shall provide a supplemental test to confirm presence of antibodies as an adjunct to ELISA screening without charge to Missouri laboratories and physicians requesting this service.

√ This confidential report shall be submitted on forms supplied by the MDOH and shall be mailed within seven days of the receipt of the results of each test. Each form shall be completed in its entirety, including name, address, date of birth, race, sex, and date of test and other pertinent data. All patient information on forms shall be coded to prevent inadvertent disclosure of confidential data.

√ All physicians, counseling and testing sites, providers of care or others who perform or order such laboratory tests are required to report complete information.

√ A provider who has submitted a repeatedly reactive ELISA test to the State Laboratory for supplemental testing will have fulfilled the reporting requirement.

√ The MDOH also encourages physicians, hospital administrators, blood/plasma center operators, or other persons who determine that a person is confirmed reactive for anti-HIV to provide or arrange for counseling about the infection and cause of disease. This may be accomplished by referring the individual to a MDOH counseling and testing site. The counseling should include information about how HIV is transmitted and what preventive measures should be taken to lessen the likelihood of transmitting the virus to others. Educational materials on AIDS are available from the MDOH.

√ The MDOH encourages all providers of anti-HIV tests to obtain separate and distinct patient informed consent for each test performed. This will assure that a minimum of pre-test counselingand that patients have an opportunity to decline testing or determine how results may be released.

√ The MDOH shall conduct surveys of laboratories to determine the number of serologic tests processed for detection of HIV or antibodies to HIV in the State.

Reportability of Confirmed Anti-HIV Seropositive Tests in Missouri

On October 25, 1987, confirmed anti-HIV (Human Immunodeficiency Virus) seropositive tests became a Category II reportable disease in Missouri. All private and public laboratories, physicians and other health care providers who perform laboratory tests for antibodies for HIV are required to report complete information on confirmed anti-HIV seropositive tests. This policy is authorized by Department of Health amended rule 19CSR20-20.020, and is consistent with reportability of positive tests for other sexually transmitted and communicable diseases.

The Bureau of AIDS Prevention mailed information packets to Missouri physicians, hospitals and labs. The packets included a cover letter explaining reporting guidelines, copies of required reporting forms, instructions for reporting, a copy of the amended rule, and a model informed consent form.

Printed in this issue is the Department of Health's policy statement concerning reportability of confirmed anti-HIV seropositive tests and an outline of the procedures for reporting AIDS cases.

Questions about HIV reporting procedure should be directed to the Bureau of AIDS Prevention, **314/751-6438.** ■

AZT Reimbursement for Low-income and ARC Patients

Last fall, the Bureau of AIDS Prevention received a grant to provide AZT (Retrovir™) to AIDS and ARC patients who are unable to afford it. For patients who qualify, the entire cost of AZT is reimbursed. This program is especially helpful to the large number of patients who don't have health insurance and can't qualify for Medicaid.

Funds are still available for additional participants in this program. The application process is uncomplicated. It requires a written statement from the applicant's physician and satisfaction of three requirements:

— an applicant must be an AIDS or ARC patient whose physician has prescribed Retrovir™ (AZT).
— an applicant must not be eligible for AZT treatment by Medicaid or by a third-party insurer.
— an applicant must meet the minimum allowable income guidelines (for example, an applicant with no dependents may earn an annual income of $25,000 or less; the minimum allowable income is higher for applicants with dependents.

Interested persons should contact Nancy Bush, Bureau of AIDS Prevention, P.O. Box 570, Jefferson City, MO 65102, telephone **314/751-6146.** ■

The Eight-Point Plan to Combat AIDS in Missouri

In June 1987, the Missouri Department of Health released the eight-point plan that its Bureau of AIDS Prevention would use to prevent the spread of the deadly AIDS virus in Missouri. The tenets of the Department's eight-point plan are assurance of confidentiality, protection against discrimination, and the provision of care for those individuals affected by the AIDS virus.

I. Reporting Positive AIDS Virus Antibody Blood Test--Reporting of all seropositive tests will provide valuable epidemiologic information and will allow follow-up to assure that adequate education is provided.

II. Contact Notification--The object is to warn people who have been placed at risk and to prevent them from placing others at risk.

III. Confidentiality and Anti-discrimination Safeguards--Discrimination against HIV-infected individuals could be a major deterrent to testing compliance. The department supports legislation that protects the rights of persons with HIV infection and AIDS.

IV. Expanded Testing and Counseling--The goal of routinely offered counseling and testing is to reduce the spread of HIV by informing persons how to prevent transmission and providing assistance and motivation to attain this goal.

V. Expanded Public Education--To date, the most effective means of reducing the spread of AIDS is frank education for the entire population. The general population must understand the nature of the HIV infection, its mode of transmission and the precautionary measures available.

VI. Provision of Care--The State must consider the total spectrum of care that will be necessary. Since most persons with AIDS do not require inpatient medical care, a variety of outpatient services and home care utilizing skilled nursing and other services will be required.

VII. Non-Compliant Individuals-- On rare occasions persons with either AIDS, ARC or who are infected with HIV may resist modifying their behavior to protect the health of others. Public health officials must take appropriate measures to assure that these non-compliant individuals change their behavior.

VIII. Establishments Implicated in the Spread of Infection--The Department of Health is requesting that local health authorities monitor these establishments closely. If behaviors contributing to the spread of HIV occur, action must be taken to close these facilities.

Procedures for Reporting AIDS Cases

Acquired Immune Deficiency Syndrome (AIDS) became a Category II reportable disease in Missouri effective June 20, 1983 (19 CSR20-20.020). The following procedure should be followed when reporting an AIDS case.

1. Diagnosis must be made by the attending physician(s) based upon the CDC case definition (rev. 8/87) for Acquired Immune Deficiency Syndrome. For reporting purposes, a case of AIDS is defined as an illness characterized by one or more of the "indicator" diseases depending on the status of laboratory evidence of HIV infection.

2. Reports are to be completed by the physician/clinic or designee (e.g., ICP, medical records librarian, nurse, etc.) utilizing the AIDS Confidential Case Report Form (CDC50-42A - Adults and children >13 years old at the time of diagnosis; or CDC 50.42B - children <13 years old). Case report forms may be obtained from the Missouri Department of Health, Bureau of AIDS Prevention, 314/751-6438; the Kansas City AIDS Program, 816/923-2600; or the St. Louis City Metro AIDS Program, 314/658-1159. The AIDS Confidential Case Report forms (VDV 50.42 A & B) are designed to collect information in a confidential manner that will lead to a better understanding of and ability to control the spread of AIDS. Instructions for completing the form are provided on the reverse side of the form.

3. Case reports (all 3 copies) should be forwarded through the Kansas City or St. Louis AIDS programs or directly to the Department of Health, Bureau of AIDS Prevention. **To protect patient confidentiality during the mailing process, patient name and address should be mailed on the form provided in a separate envelope from the case report form.**

For More Information, Contact:

Kansas City Health Department
Communicable Disease Division
Attn: Kate Dietrich
1423 E. Linwood
Kansas City, MO 64109
816/923-2600

St. Louis City Health Division
Attn: Daniel Claverie
Suite 436
P.O. Box 14702, 634 N. Grand
St. Louis, MO 63178
314/658-1159

Missouri Department of Health
Bureau of AIDS Prevention
P.O. Box 570, 1730 E. Elm St.
Jefferson City, MO 65102
314/751-6438

MISSOURI HIV-ANTIBODY COUNSELING AND TESTING SITES

St. Joseph 816-271-4725	**St. Joseph/Buchanan County Health Department** 904 South 10th Street - St. Joseph, MO 64503	Terri Dixon, R.N.
Kansas City 816-231-8895	**Kansas City Free Health Clinic** 5119 East 24th Street - Kansas City, MO 64127	Randy Gould, Administrator
Independence 816-881-4424	**Jackson County Health Department** 313 South Liberty - Independence, Mo 64050	Marilyn Burkett, R.N.
Marshall 816-886-3434	**Saline County Nursing Service** 76 West Arrow - Marshall, MO 65340	Billie Vardiman, R. N.
Joplin 417-623-6122	**Joplin City Health Department** 513 Kentucky Avenue - Joplin, MO 64801	June Tatman, R. N.
Springfield 417-864-1686	**Springfield-Greene County Health Department** 227 E. Chestnut Expressway- Springfield, MO 64802	Maureen Miller, R. N. Desa Beezley, R. N.
Macon 816-385-4711	**Macon County Health Department** 1131 Jackson - Macon, MO 63552	Grace Osman, R. N.
Columbia 314-874-7355	**Columbia-Boone County Health Department** 600 East Broadway - Columbia, MO 65205	Linda Hancik, R. N.
Jefferson City 314-636-2181	**Cole County Health Department** 210 Adams Street - Jefferson City, MO 65101	Ivah Braun, R.N.
Flat River 314-431-1947	**St. Francois County Health Department** 1025 W. Main Street - Flat River, MO 63601	Jane Hartrup, R.N.
Poplar Bluff 314-785-8478	**Butler County Health Department** 1618 N. Main Street - Poplar Bluff, MO 63901	Vicki Sparkman, R. N.
St. Louis Metro		
314-854-6143	**St. Louis County Health Department** 601 S. Brentwood - Clayton, MO 63105	Mario Barbel
314-658-1159	**St. Louis City Division of Health** 634 North Grand-4th Floor - St. Louis, MO 63178	Mario Barbel
Cape Girardeau 314-335-7846	**Cape Girardeau County Nursing Service** 44 North Lorimer - Cape Girardeau, MO 63701	Charlotte Craig, R. N.
Kansas City 816-923-2600	**Kansas City Health Department** 1423 E. Linwood Blvd. - Kansas City, MO 64109	Georgia Nixon

Confirmed HIV Infection: A Public Health Approach

The reporting by name of confirmed positive HIV antibody test results, with requisite contact notification, is mandated by Department of Health rule under state statute 192.020. That law requires the Department of Health to safeguard the health of Missourians, and, ". . . . to make such orders, findings, rules and regulations as will prevent the entrance of infectious, contagious and communicable diseases into the state."

Confidential reporting by name of individuals infected with communicable diseases is required by Department of Health rule number 20-20.020, "Reporting Communicable Diseases." The reporting of confirmed HIV infection and related illnesses should not be an exception.

Confirmed HIV infection is a public health problem and it must be treated as such. Reporting by name of confirmed HIV infection facilitates contact notification, which is vital for these four reasons.

1. Confidential care of a patient with an infectious condition assumes that the patient will act responsibly and will take proper action with regard to the rest of the population of the state.

2. The duty to warn the unsuspecting person who has been exposed and may be infected is implicit in the philosophy of both public and private preventive health care.

3. Medical advances relating to HIV infection are occurring so rapidly that persons infected may need to be notified quickly of any future medications. Public health is best able to perform this service.

4. Message targeted to individuals who have been infected with or exposed to HIV must be specific and tailored to each person's life style. This type of education is best provided one-on-one.

AIDS RESOURCE CENTER

The Missouri Bureau of AIDS Prevention has established an AIDS resource center. The center is a clearing-house for newsletters, journals, magazines, resource manuals, books and manuscripts about AIDS. Newspaper clippings are cataloged and vertical files of articles on specific subjects such as health care workers, morticians, nursing care facilities are maintained.

The Center has access to several computerized bulletin boards: a medical bulletin board (Public Health Network/Dialcom), the Centers for Disease Control Bulletin Board, CAIN (Computerized AIDS Information Network) and the AP wire service.

Instructional pamphlets and audiovisual teaching aids are available as well as bibliography searches with access to cited references. If you or your organization request information on special subjects or concerns, the Resource Center will investigate and provide information, referrals and altenatives, when available.

For more information, contact Virginia Mathews, Bureau of AIDS Prevention, 314/751-6438

PAMPHLETS/BROCHURES

AIDS, Sex and You--American Red Cross/U.S. Public Health Service General description of virus and transmission; aimed at persons who are sexually active.

AIDS and Your Job - Are There Risks?--American Red Cross/ U.S. Public Health Service: Guidelines for specific professions i.e., food handlers, personal service workers, civil emergency

AIDS - Questions and Answers--Missouri Department of Health: Lists phone numbers and addresses of Missouri organizations that provide information support and services.

Caring for the AIDS Patient at Home--American Red Cross/U.S. Public Health Service: Home care of an AIDS or ARC patient; explains safeguards and protection procedures.

Coping with AIDS--National Institute of Mental Health: Intended to familiarize health/mental health professionals and para-professionals with the psychological and social problems associated with AIDS.

If Your Test for Antibodies to the AIDS Virus is Positive--American Red Cross/U.S. Public Health Service: Explains meaning of the antibody test, what a person with a positive test can do to protect their health, and what to do to prevent transmitting the virus to others.

Preventing the Transmission of Hepatitis-B, AIDS and Herpes in Dentistry--Centers for Disease Control: Describes infection control procedures which dental health care personnel should take to minimize the risks of transmission of herpes, hepatitis-B and AIDS.

The Surgeon General's Report on AIDS--U.S. Public Health Service: A summary of Surgeon General C. Everett Koop's report on AIDS given in September of 1986.

What you should know about AIDS--Centers for Disease Control A basic pamphlet useful to all ages, seventh grade to adult.

Women and AIDS--Missouri Department of Health: Explains how women can be at risk, how to prevent being exposed and becoming infected with the virus, and what a woman should do if she is exposed to the virus.

AUDIOVISUALS

AIDS - An ABC News Special Assignment
1/2" VHS, 20 min., ABC News: 1986 ABC News Special Assignment which gives overview of disease; targeted at the general audience. Good for junior high and older.

AIDS and the Health Care Worker
1/2" VHS, 20 min., MTI Films: Factual approach to problems and solutions facing health care workers. Basic infection control procedures as well as care guidelines.

AIDS and Your Job - What You Should Know
1/2" VHS, 13 min., Centers for Disease Control/Public Health Service: Emphasizes precautionary infection control measures that civil emergency and public safety officials should take when called to attend victims when it is unknown whether the AIDS virus is present. Adult audience.

AIDS Fears and Facts
1/2" VHS, 23 min., Centers for Disease Control/Public Health Service: Discusses the AIDS epidemic in layman's terms, dispels myths with the facts and features a question and answer session; general audience.

(Continued on back...)

Audiovisuals, Continued...

The AIDS Movie
1/2" VHS, 26 min., New Day Films: Importance of awareness and prevention. Interviews with AIDS victims. High school through adults.

AIDS - What Is It?
1/2" VHS, 28 min., Health and Life Video, Inc.: Layman's terms about the virus and the disease. Teens through adults - general audience.

Beyond Fear
1/2" VHS, 3 - 20 min. segments, American Red Cross: Each tape holds three targeted segments, The Virus, The Individual and The Community. Each segment is aimed at dispelling myths, providing facts and allaying unnecessary fears. High school through adults.

Everything you wanted to know about AIDS but were afraid to ask..
1/2" VHS, 45 min., Home Box Office: A question and answer type format that is appropriate for seventh grade to adult. Good for a general audience.

Letter From Brian
1/2" VHS, 30 min. American Red Cross: This film brings to light many of the questions that young adults face when making important decisions about their lives. Target group - young adults, college students.

Men, Women, Sex and AIDS
1/2" VHS, 49 min., NBC News Nightly Special: Discusses myths about transmission, social and economic impact of the epidemic, what responsible behavior, risk behaviors, and how early and explicitly young people should be taught about AIDS. High school through adults.

Overcoming Irrational Fear of AIDS
1/2" VHS, Carl Media Productions: Targeted towards health care workers who deal directly with patients and patient care. This video is best used for training and inservices.

Sex, Drugs and AIDS
1/2" VHS, 19 min., ODN Productions: Targeted to a young general audience. Straight forward approach in educating the viewer. Targeted towards teens and adults - high school level and up.

What if the Patient Has AIDS?
1/2" VHS, 20 min., Centers for Disease Control and the U.S. Public Health Service: Aimed at health care workers and ancillary personnel, details precautions and infection control measures.

Now Available —

"Recommendations for Prevention of HIV Transmission in Health-Care Settings," *MORBIDITY AND MORTALITY WEEKLY REPORT*, August 21, 1987/ Vol. 36 / No. 2S supplement. The recommendations contained in this document consolidate and update CDC recommendations published earlier for preventing HIV transmission in health-care settings.

"Public Health Service Guidelines for Counseling and Antibody Testing to Prevent HIV Infection and AIDS," *MORBIDITY AND MORTALITY WEEKLY REPORT*, August 14, 1987/ Vol. 36/ No. 31. These guidelines are the outgrowth of the 1986 recommendations.

Contact the Bureau of AIDS Prevention Resource Center
Virginia Mathews
P.O. Box 570, 1730 East Elm St.
Jefferson City, MO 65102
314/751-6438

Speakers Bureau

The Bureau of AIDS Prevention is scheduling recruitment and training workshops for the state AIDS Speakers Bureau.

The workshops are conducted in alternating regions of the state and concentrate on the issues relative to each. Workshop training will enable the participant to make confident and accurate presentations to community groups and general audiences.

For information, contact
Bureau of AIDS Prevention
Nancy Bush
P.O. Box 570, 1730 East Elm St.
Jefferson City, MO 65102
314/751-6146

The Missouri Department of Health, Bureau of AIDS Prevention, will conduct its second annual national conference on AIDS prevention, "Missouri AIDS 88 — A Public Health Response."

The conference will feature nationally recognized guest lecturers such as the director of the Centers for Disease Control, James Mason, M.D., Dr. P.H., and the coordinator for AIDS Research, Division of Substance Abuse Services, New York Department of Health, Don Des Jarlais, Ph.D.

An agenda that includes workshops and opportunities for group interaction will make this a working conference. Topics for the conference are varied and will include, among others, the impact of AIDS on minorities, the effect of AIDS on women and children, substance abuse, AIDS policy development and gay/bisexual transmission of the AIDS virus.

This national conference on AIDS prevention and care is targeted for people at various levels of the health care industry and for people involved in the formation of policy, public or private.

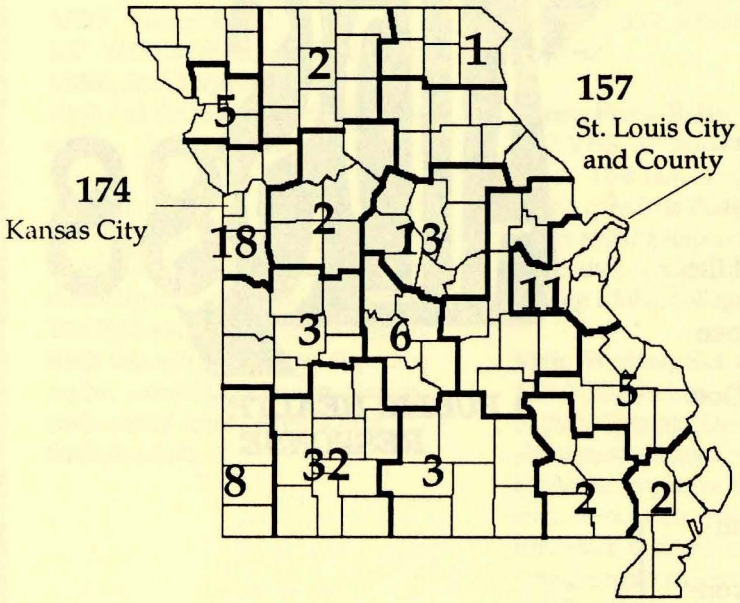
Advanced registration is advised. Enrollment is limited in each workshop; acceptance will be made on a first-come, first-serve basis. Registration forms will be mailed to past conference attendees and will also be available by contacting the Bureau of AIDS Prevention P.O. Box 570 Jefferson City, MO, 65102, 314/751-6438.

AIDS 88

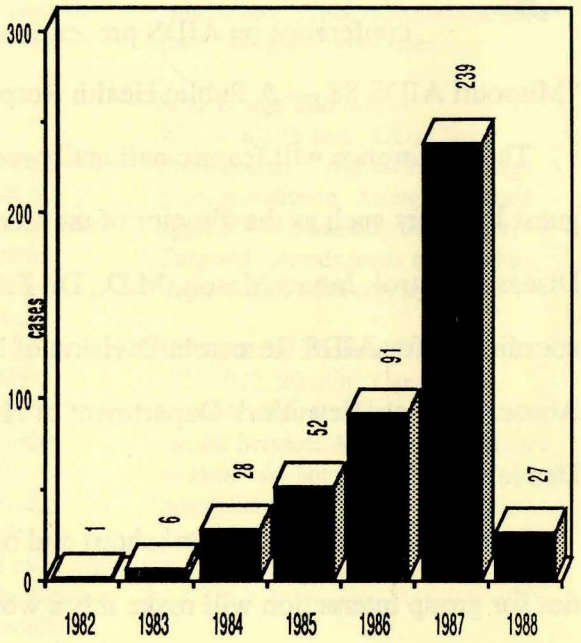
A PUBLIC HEALTH RESPONSE

March 28-30, 1988
Sheraton Westport Inn
Page at I-270 • St. Louis, Missouri

AIDS Cases Reported in Missouri by Region, 1982-to Date (444 total)



Total Missouri AIDS Cases Reported by Year to Date



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